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THE AMERICAN School Board Journal

A Periodical of School Administration

JANUARY, 1940

ANNUAL SCHOOL BUILDING NUMBER

THE BRUCE PUBLISHING COMPANY, MILWAUKEE, WISCONSIN

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The Schoolhouse Construction Future

The construction of new school buildings in the United States has, during the past two decades, been subject to decided variations. The world war caused the cessation of all new projects and brought the annual production down to a low ebb. Immediately after the war there was a rise and the annual construction operations reached something near a normal status.

Then came another cycle caused by the depression, which threatened an acute shortage in the schoolhousing of the nation. The realization of this situation caused the schools to share in the federal aid extended to a variety of public building projects.

The nation-wide school-building program as a result of federal financing of school-building projects, involved new construction in excess of a billion dollars (estimated at $1,180,092,596) is to be completed by July 1, 1940, and over two hundred and seventy-five millions ($276,333,056) have been expended for additions and repairs to school buildings on WPA projects.

That program completed, it remains that there is still definite need all over the country for continuous schoolhouse construction. While there has been a perceptible decline in the traditional ratio of increase in the school population still enough of growth has been made to demand additional school accommodations. Besides, old buildings are constantly lapsing into obsolescence. Many buildings are no longer adequate or safe.

The situation would indicate that the prospects of continued federal support are in doubt and that schoolhouse construction of the future will rest once more upon local initiative and support.

THE EDITOR

MR. SHEFFER'S PAPER DELAYED

The second half of the valuable discussion of "The Relations Between the Board of Education and the Superintendent" by Supt. W. E. Sheffer will appear in the February issue of the JOURNAL.

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The contents of this issue are listed in the "Education Index."

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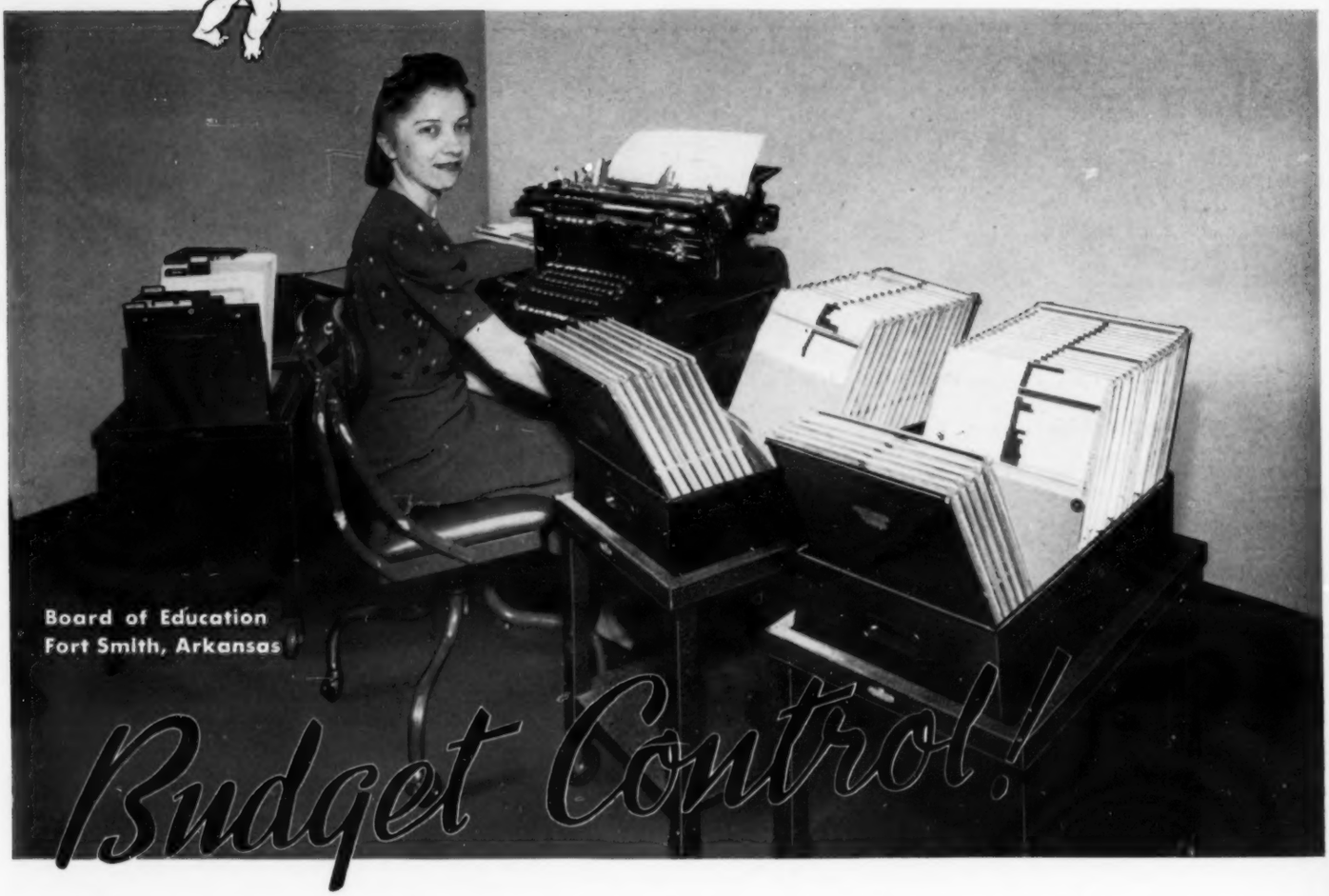

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THE AMERICAN
School Board Journal

Volume 100, No. 1 JANUARY, 1940 Subscription, $3.00 the Year

Recent Betterment in Schoolhouse Construction in the State of California

Hyman Haydis, Ed.D.[1]

During the past decade probably no state in the Union has exceeded California in large-scale school-building activity or progress in schoolhouse planning and permanent construction. This progress and activity are attributable to three factors: (1) the Long Beach earthquake of 1933; (2) the establishment of the California State Division of Schoolhouse Planning in 1927; (3) the spread of the concept of functional schoolhouse planning. The last-mentioned idea has been greatly accelerated by the necessity of large-scale school-building replacement and the work of the Division of Schoolhouse Planning. An understanding of the significance and importance of these factors is essential to a proper appreciation and interpretation of recent improvements in schoolhouse construction in California.

On March 10, 1933, the earthquake known as the *Long Beach Earthquake* wholly or partially destroyed many school and other public buildings in a number of Southern California counties. Over a wide area it caused great loss of life and damage to property. Much consternation was caused by the fact that public school buildings were among the most seriously damaged structures. The people of California were stunned by the realization that if the time of the initial shock which occurred at 5:55 p.m. had been a few hours earlier, thousands of school children would have been killed. As a result, the Legislature on April 10, 1933, passed a law making the State Division of Architecture directly responsible for rigid regulation, inspection, and supervision of the construction, or alteration of, or addition to, public school buildings.

The law requires the division to set standards which would make all school buildings earthquake resistant. Boards of education are required to submit all school-building plans to the Division of Architecture for approval. School boards are responsible for constructing all buildings up to the standards set by the State Division of Architecture. The legal liability of school trustees has been interpreted by the attorney general of the state to include accidents caused by inadequate building construction, provided the trustees are aware of structural weaknesses. A board member is negligent if he is aware of the facts, and takes no action. While not compelling boards to abandon school buildings, this interpretation has stimulated the reconstruction of old buildings.

This emergency act of 1933 has really served to give California a standard school-building code with respect to the construction of earthquake-proof school buildings, but time lessens shock, and boards of education are not yet fully aware that the law has given them a new type of responsibility. Now, more than six years after the earthquakes and the passage of the law, not much more than a good beginning has been made in school-building construction in California, except in areas where earthquakes have occurred in recent years. But the fact that the law remains on the statute books is a recognition that it is basically sound. The state guarantees the child a safe roof over his head.

The requirements of strength and durability of materials which have necessitated increased construction costs, however, have made for simplicity and striking beauty of design, with a tendency toward one-story unit construction. They have eliminated much that was useless and perhaps expensive ornamentation, and have emphasized economy in the whole realm of schoolhouse planning and construction.

The tendency to waste public money in overelaboration and overadornment in poorly planned school buildings has long been recognized. Instances abound of inadequate site size and poor drainage, high-school sites of 2½ acres and elementary sites of one-half acre possessing no level land; obstructed sites, and sites located in detrimental social surroundings. Inexperienced school architects have sometimes

The porch of a primary classroom, Huntington School, San Marino, California.

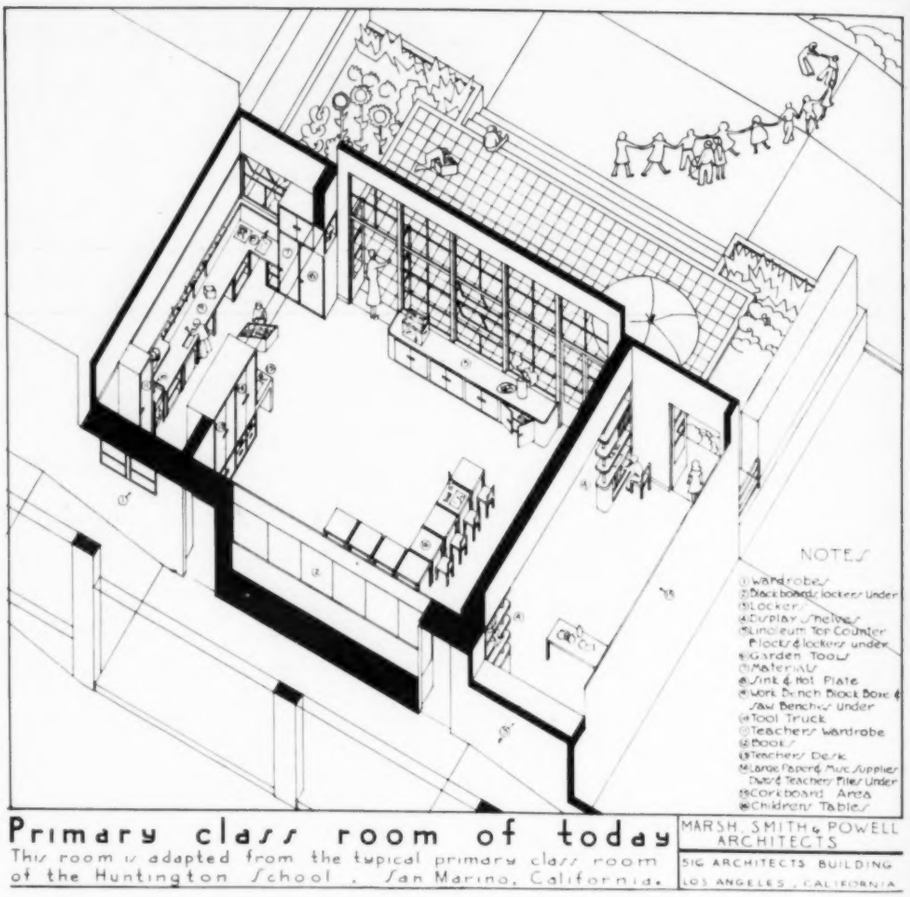
[1]Berkeley, Calif.

wasted as much as a quarter of the cubic contents of buildings in attics, in extravagant hallways and stairways of unnecessary dimensions, and in rooms too large or too small for practical utility. School boards, with the best of intentions, have been ignorant in the knowledge essential to financing and guiding a school-building program to completion. Nor have all school administrators been fully qualified to guide the architect in meeting the educational housing needs of a community.

The California Division of Schoolhouse planning was established in 1927 to improve the conditions just described. The law empowers the Division in the State Department of Education to:

a) Establish standards for school buildings.
b) Review plans and specifications for all school buildings to be erected outside of incorporated cities which have build'ng codes.
c) Approve plans and specifications submitted by governing boards of school districts, and to return without approval and with recommendation for changes any plans not conforming to established standards.
d) Make available to school districts and architects by purchase or otherwise copies of standard specifications, plans, and building codes prepared by the Department, and to
e) Make surveys upon request of governing boards of school districts outside of cities, advise concerning building needs, and to suggest plans for financing a building program to meet such needs.

All of these functions have been performed by the Division. From time to time, it has circulated in printed bulletin or mimeographed forms: suggestive layout sketches for regular and special classrooms; standards for site size and selection, for sanitary fixtures, for type, design, installation, and care of blackboards; school-building score cards; check-list records for classroom light, and so forth. Staff members have consulted with architects, boards of education, with school people everywhere in the state, and have checked many hundreds of sets of plans. The Division has been "an inspiration to those seeking the ideal, a sort of practical shock to the careless and commercial, and a mediator in community disputes." It has rendered all the services required of it by law, as well as many others merely implied and voluntarily requested by those needing professional guidance.



Primary class room of today

This room is adapted from the typical primary class room of the Huntington School, San Marino, California.

In the last analysis, however, the greatest service rendered by the Division of Schoolhouse Planning may lie in its interpretation to the members of the profession of education, of the conception that schoolhouse planning has its roots in the educational needs of the child, the teacher, and the community.

This understanding offers the only hope of keeping the school plant on the front line along with improvements in curriculum, teaching methods, organization, and personnel in our schools. Furthermore, applied purposeful planning means that the school plant can make a larger positive contribution to education than ever before.

To date, this concept of cooperative, democratic planning of school buildings has been used in a too limited manner. Schoolhouse planning is not widely recognized as a democratic professional enterprise or responsibility. Architects and school administrators have used this idea to describe the wholesome tendency to eliminate in new buildings the waste floor space and waste cubage found in older structures, and justified on the basis of creating monumental public buildings. Purposeful planning cannot really happen until large use is made of the ideas of front-line workers in the teaching process. Too often teachers' recommendations have been discarded or utterly ignored. Administrators and teachers fear that to raise a doubt with respect to their knowledge

An activity room in the new San Marino, California, grade school looking from the work alcove into the seated section.

Initial Unit, Lou Henry Hoover School, Whittier, California.—William H. Harrison, Architect, Los Angeles, California.

of school-plant needs is to cast a reflection upon their own ability. Everyone is familiar with the platitudes of the teacher on the log; good teachers are born not made; the real teacher can teach anywhere, any time, under any circumstances. On the other hand, many boards of education and administrators are very definitely of the opinion that schoolhouse planning is a financial matter entirely outside teacher responsibility or interest, and that the teachers have nothing to contribute.

Teachers, supervisors, and curriculum makers *must* concern themselves with housing problems, and administrators must provide easy avenues of flow for these ideas to school architects and planning officials. With such cooperative and democratic participation in the solution of housing problems, planning becomes actual achievement in the construction of schoolhouses.

The California Division of Schoolhouse Planning has rendered most signal service in directing the attention of communities and their legal representatives, the boards of education, to the needs of the children in a democratic society, and in bringing together for the cooperative solution of school-plant problems, the board members, the school administrator, the teacher, and the architect.

It is important to bear in mind then, in considering some of the best examples of progress in schoolhouse construction in California, that they are the result of an enlightened leadership which recognizes an opportunity in a great emergency to make school buildings modern educationally while improving them structurally. These schools embody a democratic philosophy of education and are the result of an intensive study of means, methods, and materials.

Marsh, Smith, and Powell's isometric drawing of a modern primary classroom is one excellent solution to the problem of housing the modern practical work type of school program. The photographs of the Huntington School, San Marino, Calif., show such a classroom with slight adaptation in use.

Located on a site of 6.1 acres, costing $31,800, the Huntington School contains 10 rectangular practical work classrooms 25 by 45 ft., each connected and adjacent to its own landscaped outdoor classroom; one special rest room large enough to accommodate all children who require a rest period; utility rooms such as boiler room, toilets, rest rooms for teachers, storage rooms, and janitor's closets; tile-paved terraces for each classroom; 200 ft. connecting arcade to the elementary school which was on an adjoining site; a large enclosed kindergarten play yard; a large, paved bus drive in (90 ft. diameter) with its loading shelter; and extensive miscellaneous garden walls, planting, and cement sidewalks. The total cost of construction, contract price, is $148,955, exclusive of architect's fee, inspection as required by the state, or state filing fees. Movable equipment purchased by the district and which was not included in the above-mentioned price, $6,582.76. Grounds improvement which was done by the WPA would have cost an additional $5,000, if the work had been done under contract.

The Huntington solution is outstanding for its built-in lockers, book storage, wardrobes, etc. The provision for individual or group activity either of the work-study or remedial-reading type has been well thought out. The difficulty of providing for the practical work type of program in any solution using the old-type rectangular unilaterally lighted classroom is evident. There are too many corners for convenience and the usual lack of even light distribution of adequate working intensity.

The Lou Henry Hoover School at Whittier, Calif., is another outstanding example of the practical work-type classroom with adjacent outdoor-classroom lawn space. The teacher was recognized as holding the key to the situation. Her needs for equipment, for tools, and for storage space, were given intensive consideration, but the school is primarily the work of a knowing superintendent who worked continuously with the architect to develop a plant to meet the needs of a well-thought-out philosophy and program of education.

This four-room school is really the first unit of a larger building. The contract cost was $52,282. The square foot cost, $5.93, and the per cubic foot cost, 32½ cents. The cost is somewhat high due to the fact that all storage space and toilet facilities are provided for a larger number of pupils than at present housed in the building. The building is of fireproof and earthquake-resistant construction throughout. The finish floors are laid on concrete slabs on fill. The walls and roof are of reinforced concrete. The ceiling is of acoustic blocks hung from steel beams. (The upkeep on this building will be a minimum.)

The landscaped outdoor-classroom space back of the building, and in line with the main entrance, lends itself for use as an amphitheater with a seating capacity for two hundred. The stage is part of the main covered corridor which extends the entire length of the building on the east. Opening upon this corridor are doors which make it convenient also for the children to bring workbenches and tools outside for much of their construction work.

The architecture of the Lou Henry Hoover School deserves special note. It represents a softening of hard materials in new lines of simple beauty. The great mural above the entrance depicting the

mother and the home as the center of other educational influences, is just poured concrete. The inscription on the approach to the building, *"What You Would Have in the Life of a Nation, You Must First Put Into Its Schools,"* is a constant reminder to the community and to society at large of their responsibility.

The Avenal Elementary School practical work-type classroom is the result of conference and study involving the teachers and pupils, the principal, the district superintendent, the board of education, the architect, and the California Division of Schoolhouse Planning. It shows the influence of the Huntington-type classroom, and at the same time indicates great improvement. The direction of improvement is definitely away from the old-type, unilaterally lighted, rectangular room. The layout makes a larger number of varied activities possible, includes more generous space provisions, places the teacher in a strategic position for thoroughgoing supervision, and is much better lighted.

The Avenal classrooms are north lighted because in south- and west-lighted rooms the control of sunlight is difficult and solar heat becomes objectionable in this climate. Side lighting with the class facing the inner wall and the teacher facing the window would be annoying to the teacher and would result in introduction of blinds which would further reduce the level of lighting. Light from behind the student is not the best for reading. To meet these difficulties, the rooms are bilaterally lighted with clere-story windows on the east and north sides (left and rear of pupils). Low windows are also provided on the north to light the workbench and activity area. The clere-story windows have an advantage because the source of the light is high. They have also the advantage of admitting light reflected from a light-colored roof, which light is diffused upon the children's desks from the white ceiling. Any possible glare from the large glass area and light reflected from the roof may be tempered with a slatted type of shade without reducing too much the level of natural lighting.

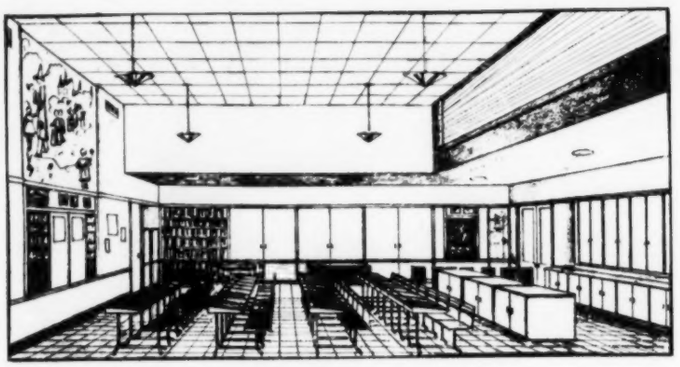
The cases separating the seating and work spaces are not higher than work level, and are on casters so that the room may easily be arranged to accommodate overflow seating. The teacher's desk is so located that she may easily reach any group in the room. The room is planned for 36 desks but will easily accommodate 45.

The appointments include reversible blackboards, one side cork and adaptable as easels; storage closets for large drawings laid flat; roll maps, extra easels, paper; textbooks, reference and library books; teacher's cloaks; paper roll, paint materials; tool truck, model materials, temporary project storage in cubicles; filing-case drawers for the teacher's reference material, pictures, etc.

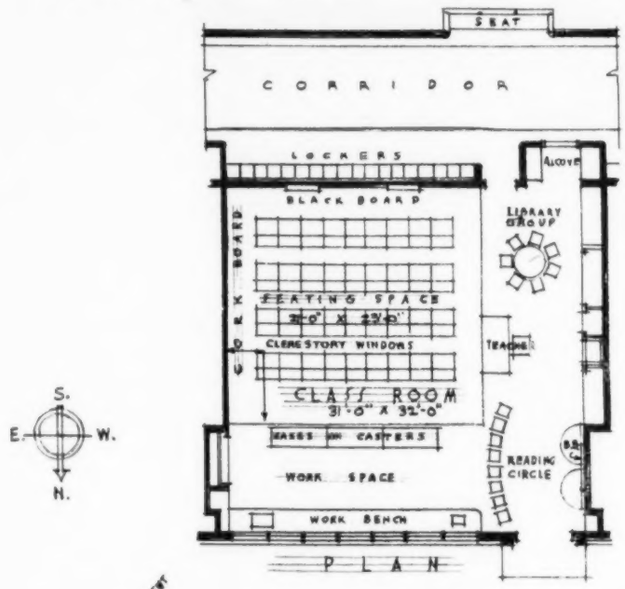
Provision is made for visual education for upper grades; educational programs or music may be had through a record attachment to the loud-speaker or by radio.

Students' cloaks and lunches are kept in corridor lockers. Ample space is provided to avoid interference with corridor circulation. The lockers are two student, single tier, and a display case is recessed in the wall above for the display of classroom work.

Heating is provided by two recessed forced-air hot-water-coil unit heaters. These are under individual thermostatic room control and are arranged to introduce fresh air. (Concluded on page 119)



INTERIOR VIEW LOOKING WEST



PLAN

SECTION LOOKING NORTH CROSS SECTION

ACTIVITY TYPE CLASS ROOM IN THE AVENAL ELEMENTAL SCHOOL

KINGS COUNTY CALIFORNIA

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A general perspective view of the High School, Carmel, California, from the architect's model.

School Construction Standards

N. E. Viles, Ph.D.*

Until the present decade, school construction standards were in many cases determined by local regulations and desires, and the funds available. The adoption of certain standards by officials of the Public Works Administration[1] under the last federal aid program, directed attention to the lack of any uniform construction standards. Following this trend, the National Council on Schoolhouse Construction gave recognition to this lack in their latest report,[2] which included some proposed construction standards. In each of these proposed standards for schoolhouse construction there has been attempt to provide some flexibility to care for differing needs and to allow for differing financing abilities.

However, each of these proposed standards may yet be considered tentative. If they are developed into more or less permanent standards, certain involved factors should be given careful consideration. Some of these basic features are safety, adequacy, and cost. These three factors are so intertwined that each must be considered in its relation to the other two.

The Safety Factor

The safety factor must be given first consideration in setting up school-plant construction standards. We cannot afford to require that pupils attend school without providing comparatively safe housing facilities. School-plant safety may be evaluated on the basis of the protection provided for the life, limb, and health of the pupils. While few people will question the need for ample protection for the lives and health of the pupils, there is some difference of opinion concerning the best methods of obtaining this protection. While fire-resistive buildings do provide pupil and property protection against common fire hazards, this type of construction is not feasible in many districts and some other means should be adopted to give the pupil protection needed. Two practices that aid in providing pupil safety are definite height limitations for buildings constructed wholly or in part of combustible materials and adequate exit provisions. Any safety standards developed should include provisions for ample exit facilities from any place in the building. They should provide for safety from other hazards through the elimination of sharp corners, the erection of rigid stair handrails, standard stair risers and treads, the installation of protected electric wiring, and the segregation of heating plants from areas where pupils assemble.

Adequacy of Buildings

School buildings are erected for the purpose of providing adequate facilities for the school program. Curricular changes and variations in teaching methods together with increased enrollments in secondary schools make it necessary in many cases to provide large room areas or to provide rooms that may be adapted in size to the school needs. Regardless of the type of construction the building that does not provide facilities for a modern school program fails to satisfy the purpose for which it was erected. These ever-changing demands for space and adaptability make more difficult the establishment of fixed construction standards. With careful study and proper design it should be possible to provide the desired space and floor area without sacrificing the needed safety features in the building.

Costs as a Problem in Standards

While safety and adequacy are of prime importance, one cannot ignore the cost factor in setting up construction standards. The cost of construction is closely interwoven with those for maintenance and current operating expenses. It is estimated that the average school-plant value for elementary and secondary schools in the United States is about $255 per pupil enrolled.[3] While certain school districts may be able to provide as much as $800 per pupil for new construction when needed, many other school districts are unable to raise more than $30 per pupil enrolled for the purpose of providing new housing facilities. While the more fortunate districts can provide safe, adequate buildings it is obvious that the poorer districts must plan an economical type of construction, if they are to provide shelter for their pupils and even semiacceptable facilities for their school programs. With these poorer districts it often becomes a question of limited or no school-plant facilities or, at the best, an economical type of building.

The foregoing statements should not be interpreted as a plea for cheap construction or for omitting certain safety factors in setting up construction standards. It is realized that, in congested areas where large numbers of pupils are housed in one building, the hazards in fire-resistive or semifire-resistive buildings may be equal to those in properly planned, smaller buildings of combustible material in rural or consolidated school districts. The terms safety, adequacy, and economical construction are not necessarily incompatible if proper attention is given to all three elements in planning school buildings.

Height of Schoolhouses

In the development of construction standards there is an interrelation among such factors as height, exits, basement use, types of floor, wall, and partition construction materials permitted or approved. There is today a feeling that one-story buildings may be provided with sufficient exit facilities to provide pupil safety even if erected of combustible materials. It is realized that increased life and greater stability may be provided in buildings of more costly construction; but where funds are limited the one-story building, properly designed, offers possibilities of increased facilities with the funds available, particularly in sparsely settled areas or in locations where ample acreage for school sites is available. Generally speaking, these buildings are limited to eight or ten classrooms plus needed activity rooms. However, the recent Handley School in Winchester, Va., a 35- to 40-teacher school, represents an excellent illustration of the possibility of large one-story buildings.

Where buildings of more than one story must be erected it seems probable that all exterior walls and load-bearing interior walls should be of masonry construction or if the load in these interior walls is carried on steel, with curtain walls of masonry between the columns, these columns should be sufficiently protected to provide ample pupil safety. In these two-story buildings, where all basement units devoted to pupil use should be considered one story, pupil safety cannot be assured unless corridors and stairs are constructed of fire-resistive materials. While fire-resistive slabs under all classroom floors and fire-resistive ceilings or roofs would add materially to property protection, they probably add little to pupil protection in two-story buildings if adequate exit facilities are provided. In congested areas where buildings of more than two stories seem desirable fire-resistive floors, partitions, and roofs seem essential.

Exit Facilities

One of the most important factors in pupil safety is that of suitable exit facilities. Regardless of the type of building, no student should be far from a safe and direct exit to the outside of the building. In addition, he should have a choice of exits in case one is temporarily blocked. If the passageway is long, it should be protected from all fire hazards and be free from objectionable turns and corners. If stairways are necessary they should be so designed that hazards are reduced to a minimum. Standard risers with nonslip treads with suitable handrail facilities are essential for rapid yet safe evacuation. Insofar as possible, these exits should be so

(Concluded on page 114)

*Director of School Building Service, Missouri State Department of Education, Jefferson, Mo.

[1] *Engineering Division Order No. 30*, The Federal Emergency Administration of Public Works, Chapter 17, Part 2, Issued July 11, 1938.

[2] "Annual Proceedings." The National Council on Schoolhouse Construction. In Press.

[3] *Statistics of State School Systems*, 1935–36. United States Department of the Interior, Office of Education, p. 81.

Plumbing Requirements in High-School Home-Economics Departments

Mildred Brennan[1]

The aim of the home-economics department in the high school is to teach the art of homemaking. It naturally follows that the school equipment and its arrangement will set a standard for future homes.

Rated with the most important equipment in the home, and therefore in the home-economics department, is the plumbing. Medical authorities agree that high standards of plumbing are an important factor in the protection of health. Because of these and other considerations, careful thought should be given to the equipment in the home-arts laboratory, whether this comprises only one room, or a suite of three or four rooms.

When the home-economics department consists of one room, the combination homemaking room makes an outstanding and effective arrangement of equipment. The natural division, when space permits an allocation of three rooms, is the foods laboratory, the clothing laboratory, and the living-dining room.

The foods laboratory contains the unit kitchens. The scientifically planned modern kitchen is compact and consists of only three working areas: the refrigerator for the receiving and storing of food, the sink for its preparation and cleaning, and the range for cooking and serving. The ideal layout is to have these three working areas arranged in U shape, connected by linoleum-topped steel cabinets, with the sink as the focal point, inasmuch as it is the most used unit. However, in the schoolroom as in the home, the space available must be utilized, and compact kitchens can be arranged in an L shape or a straight line.

Since the home-economics equipment is used by so many students, it receives much harder wear than similar equipment in the home. Consequently, it should be of the very best quality. This is especially true of the sink. An acid-resisting, enameled cast-iron sink, equipped with chromium-plated swinging spout, a disappearing-spray hose, and fitted over a cabinet of heavy-gauge steel, is the ideal installation for the foods laboratory.

The acid-resisting finish protects the sink from stains; the swinging spout is a convenience in that it can be pushed out of the way when the student is working over the sink; and the cabinet is useful for storage since space for this purpose is limited in the laboratory. In the case of a 60-in. double-drainboard sink, the cabinet underneath makes available 28 cu. ft. of space that would otherwise be wasted.

The best sinks have fittings of durable brass capable of withstanding even unusual usage. These fittings are plated with chromium, and their bright, gleaming appearance adds to the attractiveness of the kitchen in the schoolroom.

The Moorhead Junior High School at Moorhead, Minnesota, has this handsome home economics room. Each unit has a full size range, and one refrigerator serves the class. Tables of the type shown are conveniently easy to push together to serve larger groups or they can comfortably accommodate four people.

With or without a cabinet, cast-iron enameled sinks may be obtained in sizes to fit the requirements of any particular installation. The double-compartment, double-drainboard sink is 72 in. long, while the 60-in. cabinet sinks have two drainboards and one compartment. The 42- and 52-in. models have only one basin and one drainboard. Two compartment sinks, in 38- and 42-in. sizes are available without drainboards. All models are 25¼ in. wide, which is the standard width of the steel-base cabinets.

The steel cabinet of the sink is equipped with towel-drying racks, which slide in and out; the drawers which are about 15 in. wide, slide easily, close quietly, and may be removed for cleaning. They are lined with linoleum to deaden sound. Cabinet sinks are made with 4-in. toe space for the convenience of the student in working close to the sink.

Sinks equipped with cabinets are popular installations for home-economics departments. Steel cabinets are recommended because they will not warp or sag out of line. However, wood cabinets are frequently built around cast-iron enameled sinks after they have been installed. Because a cabinet sink utilizes otherwise waste space, it is a practical installation. Nevertheless some school administrators prefer to have the sink installed without the cabinet.

When the class can be divided into groups of four, a double-compartment sink for each four students is a desirable arrangement. When the class is small enough so that two students may work together, the single-compartment sink, preferably with double drainboards is recommended.

Each unit includes a full-size range for the use of four students. One full-size refrigerator may serve the entire class. Table and chairs for each unit help to stimulate conditions in the home, and give the student training in serving, table setting, and experience in cleaning up.

The laundry trays should also fit into a section of the foods laboratory. It is part of homemaking that the student should know how to use this equipment in doing the home- or apartment-type of laundry. The use of starches, the effect of hot and cold water on clothes, and other related details, may be demonstrated here.

Laundry trays are available cast in one unit or in two separate units. Made of porcelain-enameled cast iron or of composition material, these trays are manufactured in various widths and sizes. The average width of the tray is from 20 to 24 in., and the length 20 to 72 in.

One type of laundry tray has a full-size 6-in. integral shelf to accommodate washing powder, soap chips, bluing bottles, and

[1]Chicago, Ill.

other accessories. Directly behind each compartment is a three-sided soap dish set at an angle to insure self-draining and soap saving. Laundry trays may be equipped with a plug and chain or lift wastes.

An electric washing machine, an ironing board, and an electric iron complete the equipment in this section. Portable screens are a convenient and inexpensive means of partitioning off this section of the room when a class is not using it.

Hot water plays a prominent part in all classes of the home-economics department. The short laboratory periods in the high school necessitate the minimum amount of time for housekeeping duties and collecting working materials. Instant hot water speeds up the work and helps both the student and the instructor to get the most out of the time.

Water may be heated indirectly by the heating-plant boiler or by a separate unit. There are two types of gas water heaters: automatic and manually operated. A fully automatic heater will maintain water at any desired temperature for all needs. No attention is required. The automatic heaters have a pilot which is permitted to burn constantly; but the main burner is turned on only as the temperature of the hot water is lowered. The thermostat will automatically shut off the main burner when the water reaches the predetermined temperature. Manually operated gas heaters necessitate the lighting of the burner by hand when hot water is desired. Overheating should be prevented by safety devices. These heaters give efficient, reliable service — which means the assurance of hot water when it is needed. This guarantees the best results in all parts of the home-economics laboratory and also serves as a demonstration of a laborsaving device that may be much needed in the community.

A compact kitchen with plenty of work surface for students is shown in this home economics room of a Chicago school. Cabinets under the work counters and at the back of the room, supply space for storage of food utensils. The sinks are double, that is, each compartment has a set of fittings. This arrangement doubles the utility of the sink and the number of students who can conveniently work at each one.

Located between the foods and clothing laboratories, the living-dining room functions in education for social and family life. It is a background against which the student acquires poise and practice in greeting guests on those occasions when the class entertains. It helps the student make the most of her own home equipment, because in the living-dining room she learns the care and arrangement of the simple furniture, which is never more elaborate than the average home in the community. The roll-away bed, used in demonstrating bedmaking and the care of mattresses, sheets, and blankets, also is tied in with instruction on care of the sick in the home.

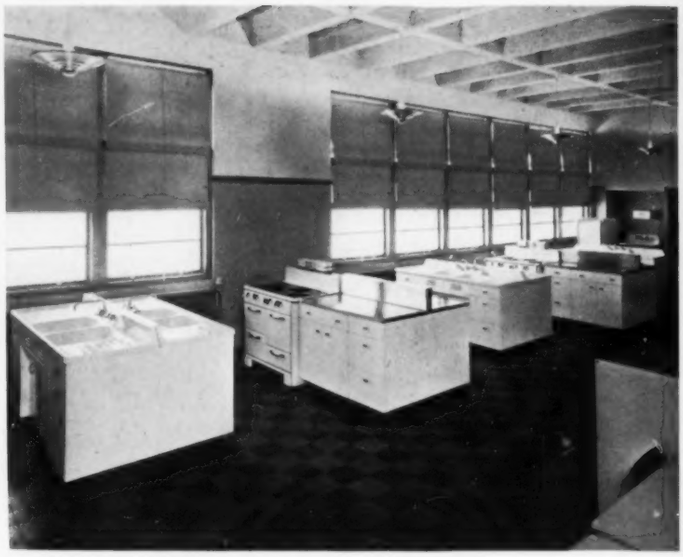
A greater number of modern schools are installing bathrooms off the living-dining room. This is to provide for the study of the principles of health and sanitation as they relate to home plumbing.

Careful consideration should be given to the arrangement and selection of the bathroom fixtures for the home-arts laboratory. The lavatory, the most attractive fixture in the bathroom, should be

The North High School of Sheboygan, Wisconsin, has this modern and efficiently equipped home economics department. The deep toe space underneath the steel cabinets enables the students to work close to the double drainboard, single compartment sink. Flowers disposed about the room, the home type of curtains at the windows, and the tables and chairs, help to stimulate the home atmosphere.

There's a home-like atmosphere in the home economics room of the Pocatello, Idaho, school. The gleaming cast iron enameled single compartment sinks with double drainboards which are set on steel cabinets, fit admirably into each compact unit of work counter, range, and sink. The cabinets under the work counters and under the sinks provide plenty of space for storing food and utensils.

An economical and space-saving arrangement of units for the foods laboratory. Wooden cabinets have been built around the single compartment, single drainboard cast iron enameled sinks in an effort to stimulate home conditions. The low wall cabinets permit teacher supervision.



Dramatic cleanliness is achieved by this installation in the home economics room of the East Bakersfield High School, East Bakersfield, California. The beauty of the cast iron enameled double drainboard double compartment cabinet sink is supported by the steel cabinet work counters and ranges.

placed opposite the door. It may be of vitreous china or cast-iron enameled ware. Vitreous-china lavatories are beautiful, glistening fixtures, easy to clean and to keep clean. Enameled ware is obtainable in the regular enameled finish or with an acid-resisting finish. Some lavatories offer a large amount of flat usable space around the bowl; others are made with an integral shelf varying from 3 to 5 or 6 in. in width. This shelf is a convenient place for toilet articles and cosmetics.

The tub in the bathroom off the living-dining room, should be of the new low type, approximately only 16 in. in height. Students should know the convenience of the low tub for old people and invalids. It is much easier to step in and out of, and its wide flat bottom prevents slipping, both in tub baths and in taking a shower. The flat rim may serve as a comfortable seat for the mother while bathing children or for old people.

Future homemakers should also be instructed in the importance of having spout opening well above the rim of the tub. Spouts for new tubs are placed on the wall at least 2 in. above the rim to prevent back siphonage of the impure water into the water-supply line. When the back siphonage occurs, the water becomes polluted and the health of the entire family may be seriously threatened.

Fixtures for the bathroom may be obtained in sets, with the lavatory, tub, and closet matching in color and design. The closet should be of the best quality to insure trouble-free operation and dependable service for the life of the school building. There are three different types of closets, the washdown, reverse trap, and siphon jet. The best, and consequently the most expensive, is the siphon jet. It is a quality product in every way. The washdown type costs the least.

Closet seats of the open-front type, made of durable composition or hard rubber material should be used. This type of seat, while not the usual home installation, is best for schools because it is impervious to moisture and offers the utmost in sanitary protection.

In order that the advantages of the living-dining room may be utilized to the greatest extent with the least inconvenience, it is practical to have the clothing laboratory adjoining this room. The living-dining room serves as an additional laboratory for the students. Study of the quality of materials, and practice in sewing and planning for the room, are definite advantages obtained from this arrangement.

The clothing laboratory contains the sewing machines, worktables, and triple mirror. Chairs should be chosen that will be comfortable and will insure good posture. A separate clothing laboratory provides plenty of space for wardrobes for finished and unfinished garments.

The lavatory in the clothing laboratory plays an important part. It provides water for washing hands before handling material, and for pressing. It is sometimes used in teaching the correct method of washing sweaters, shrinking garments, testing for renovating, fading, and sizing. The laundry trays in the foods laboratory are more generally used for this purpose, but a lavatory with a wide roomy bowl in the clothes laboratory can serve for many demonstration uses.

At least one ironing board and one iron are essential in this room for pressing garments.

In a one-teacher home-economics department, or in a school where there is not sufficient space for a three-room layout, the combination homemaking room has proved a very satisfactory arrangement.

If desired, the room may be divided by screens into two sections. One part contains the unit kitchens; the other part is arranged as a living room. In the kitchen units of a homemaking room of this type, some school administrators prefer to install cast-iron enameled combination sinks and laundry trays. This is a double-compartment unit, the sink compartment of which is 8 in. deep, and the laundry tray 14 in. deep. It may be installed with or without cabinets. An acid-resisting enameled finish gives added years of beauty and usefulness to this as to all other enameled cast-iron fixtures.

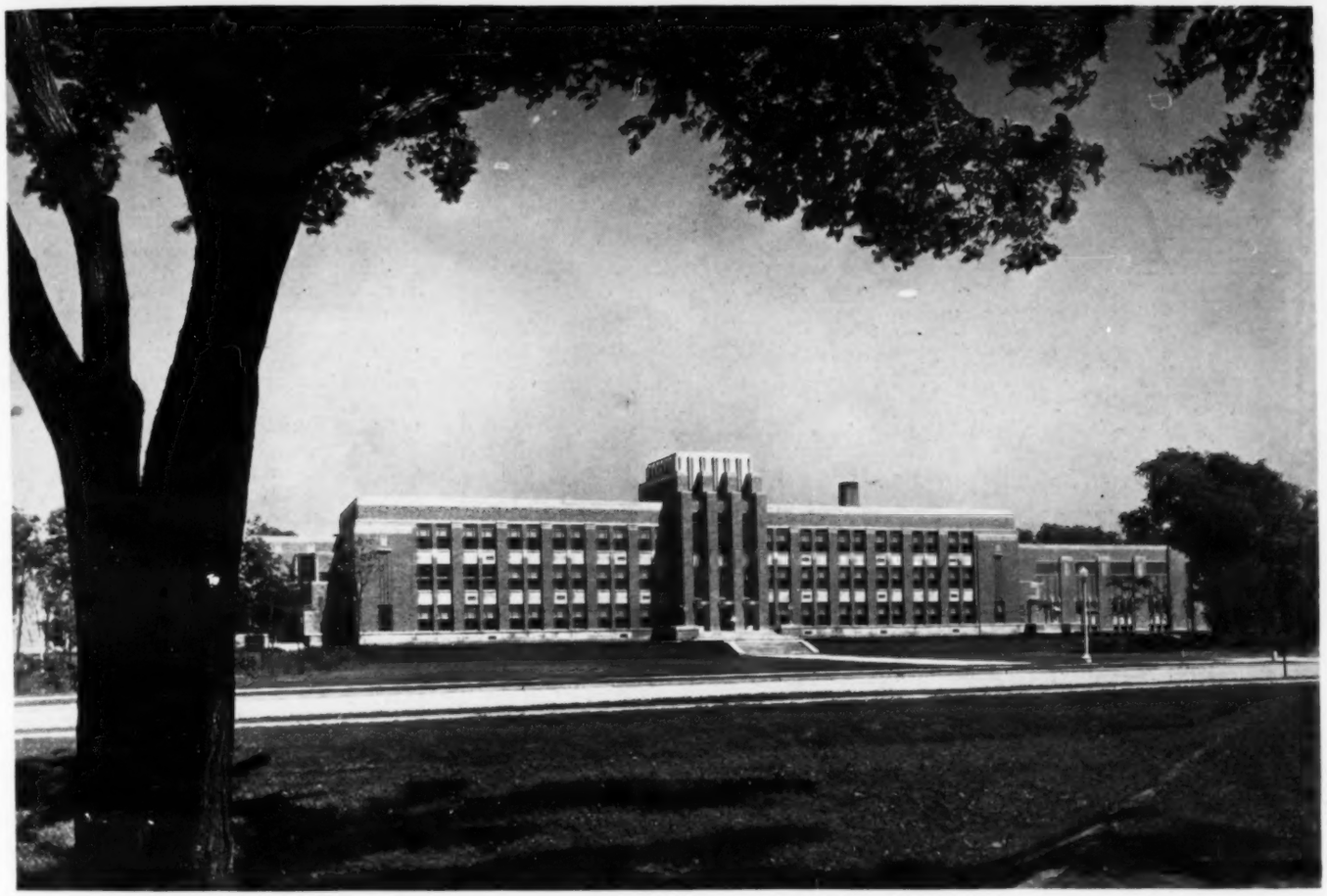
If the living room half of the combination homemaking room is equipped with folding living-room tables, the meals may be served in attractive surroundings. These tables will serve many other purposes.

The living room takes on a homelike atmosphere. Storage cabinets conceal folding tables and chairs used for sewing or other activities. A day bed, a teacher's desk of the home type, and other simple furniture may be arranged to emphasize this atmosphere, and yet leave plenty of room for grouping of the students for class discussions.

Resilient, and the least tiring to the student, linoleum is an outstanding floor material for this department in the school, and should be chosen in a plain dark color, which will not show the wear as quickly as printed linoleum. Rubber and so-called asphalt tile are also durable and comfortable to walk on, and like linoleum are water resistant. If the school already has concrete floors, several coats of paint may be applied to make them water resistant.

Many combinations of the two layouts for home-economics departments have been worked out and used successfully throughout the country. Regardless of the space allotted to the class, teacher and pupils can

(Concluded on page 119)



Niles Township High School, Niles Center, Illinois. The building faces directly west. The academic unit is in the center, with the assembly-library unit to the north, and gymnasium-shop unit to the south. The building was designed by Royer, Danely and Davis of Urbana, Illinois.

The Niles Township High School

Miss Mildred E. Tess[1]

With the organization of a community high-school district in Niles Township in June, 1936, its newly elected board of education was faced with the challenging problem of building the township's first high school. To this problem the board added a determination to make the high-school building outstanding for both educational and architectural features, despite the fact that the five villages in Niles Township, all northwest suburbs of Chicago, were located only a few miles from many fine high schools of various types of architecture and excellent educational attainments.

In less than three years these high aims have been realized and the Niles Township High School has achieved distinction. Perhaps its most unique feature is its completeness, due to expert planning, continual attention to details, and careful financing aided by PWA and WPA grants. The work of landscaping, construction, and equipping was coordinated throughout the building program with the result that Niles Township has a high school "made to order" for its students and community.

[1]President of Board of Education, Niles Township High School District, Niles Center, Ill.

Expert Advice

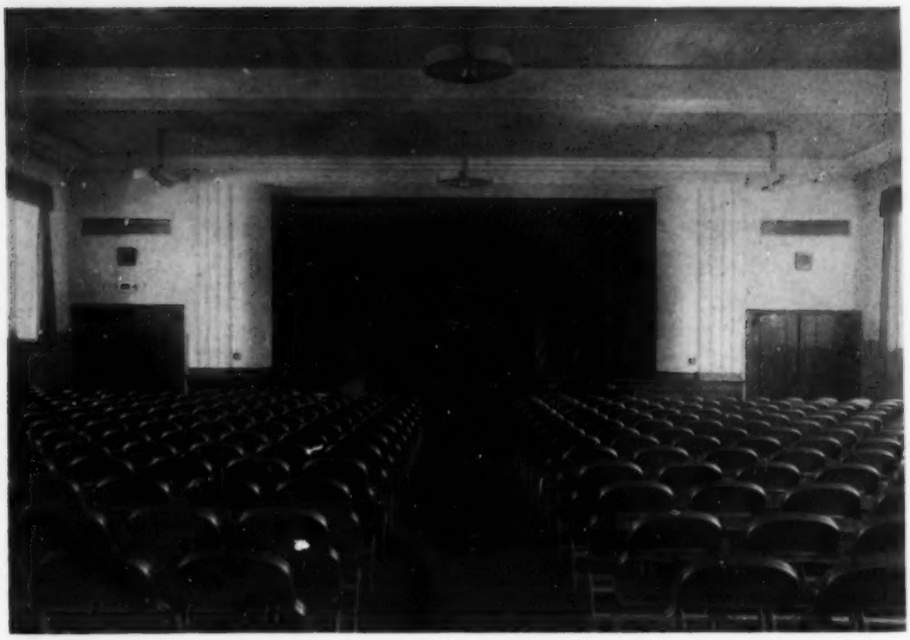
The new building, equipment, and grounds represent the culmination of careful, thoughtful planning by persons thoroughly experienced in school-plant designing. In order to plan and build most wisely and to avoid the experimentation so frequently practiced on public buildings, the board decided, shortly after the organization of the district, to avail themselves of the most expert advice obtainable. This decision was based on observation, previous school-building experience of some of the members, and an increasing awareness of the possibility of perpetuating many undesirable features of older buildings by copying what might not be suitable to the needs of Niles Township.

In accordance with the board's aim to have expert advice, a firm of architects specializing in designing school buildings, Royer, Danely & Davis, of Urbana, Ill., was engaged. A consultant of many years' experience in planning and equipping, was the second adviser employed by the board. The services of Mr. Thomas J. Higgins of Chicago, helped to "cut corners" on building and equipment costs and also helped to fit the school to the students and community.

The consultant and Superintendent R. E. Cotanche made a survey of present and probable future enrollments and studied both the community and curriculum trends. Their conclusions were: (1) In this suburban, residential, nonindustrial community of 12,000, the present enrollment of 500 would reach 1,200 in five years. (2) If funds permitted, a building to accommodate 1,200 students should be built. (3) The building should be planned for a curriculum emphasizing college-preparatory and commercial subjects and for community as well as student usage.

On the basis of these findings, the consultant, frequently with the assistance of superintendent or faculty, recommended: the number, location, and types of rooms and other facilities; suitable equipment with accompanying scale drawings showing its placement and the necessary dimensions of rooms; cases and storage space; blackboards and corkboards; and various other special features. The consultant also prepared plans and specifications for and supervised the installation of most of the equipment.

Because the high-school site consisted of a triangular 20-acre tract of land that was both heavily wooded and largely below street level, there was need of careful advice in orienting

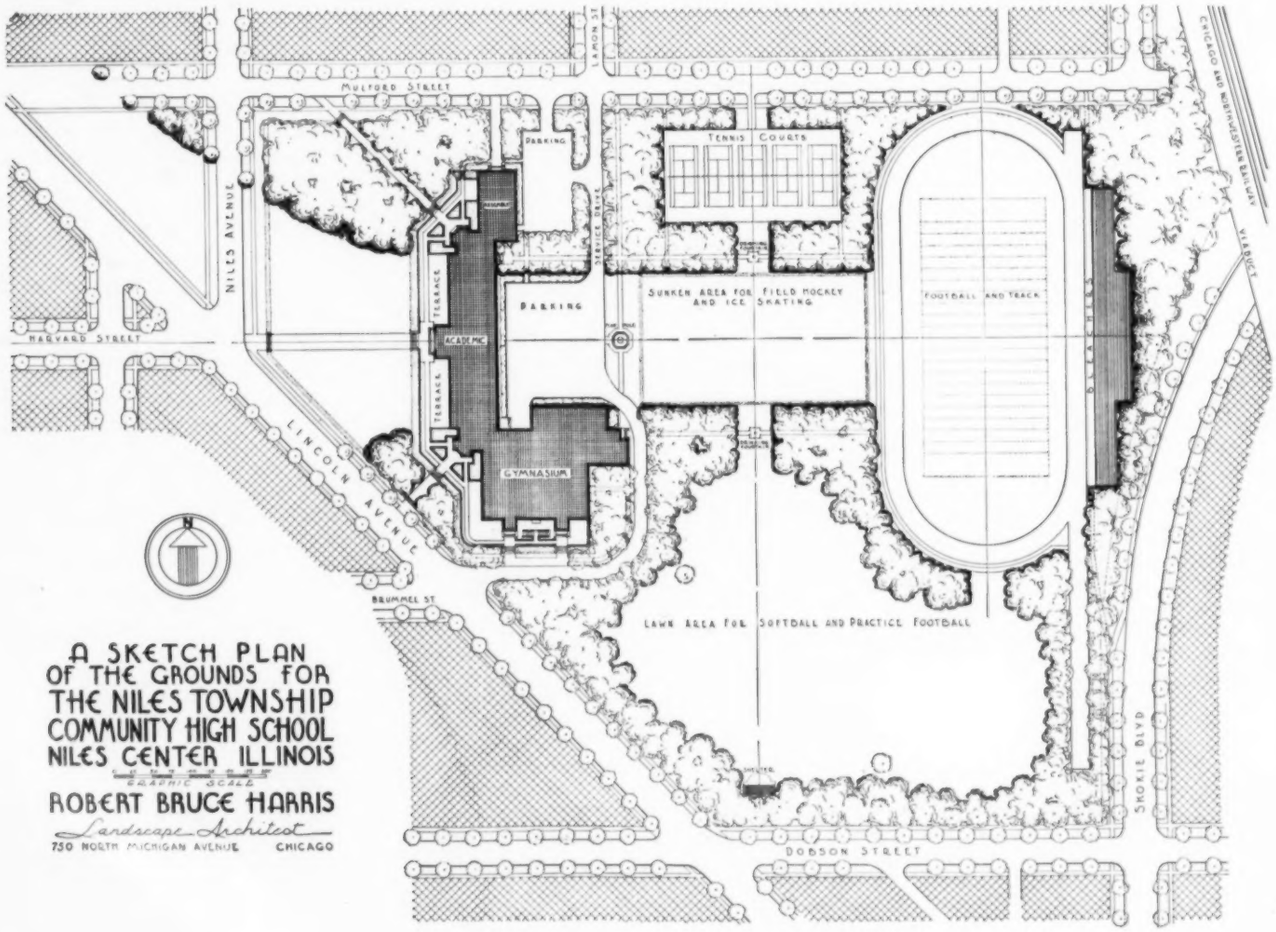


The assembly room, when used for auditorium purposes, seats 400. Equipped with folding chairs, it is easily converted into an excellent room for social activities for school and community use.

the building properly; clearing, planting, and transplanting; installing water and drainage systems; providing facilities for recreation and athletics; and beautifying the site. The planning and supervision of this work were under the direction of Robert Bruce Harris, landscape architect of Chicago. On his recommendation, the building was faced directly west, a location that has the advantage of: (1) good balance, (2) east or west lighting for academic classrooms and north light for art rooms and shops, (3) convenient access to the building and to parking areas, and (4) maximum use of the grounds with provision for a future building addition to the east. The "below grade" feature of the grounds was turned into a distinct advantage by an interesting use of terraces, steps, and sunken areas. With the completion of planting, walks, drives, tennis courts, hockey field, ice-skating rink, practice field, football field, running track, and bleachers for 1,500, the grounds are not only beautiful but also very efficient. Of historical significance is the flagpole which was used at the Century of Progress Exposition in 1933–34.

Landscaping proceeding concurrently with building is, of course, an ideal arrangement and one that insures a perfect setting for any building. However, the greatest advantages of early landscaping advice are locating a building correctly and planning in detail the future development of the grounds. Even if funds do not permit a landscaping project, a well-planned site is possible if plans are made before, not after, building construction begins.

Suggestions from various educators were frequently found helpful. To safeguard against errors or avoidable difficulties, the board arranged for continuous legal service throughout the project, the checking of plans and specifications by the State Fire Marshal and Board of Insurance Underwriters, and the testing of construction materials by a testing laboratory. The services of the board of education throughout the project were invaluable, as the acceptance or rejection of recommendations and plans was entirely their responsibility. Frequently, when problems arose, the board made very thorough investigations in



Left: a chemistry class in session. Right: the wood shop of the industrial arts laboratory.

order to decide most wisely and intelligently. In general, the board of education played the important role of co-ordinating agency of the entire building program.

General Building Construction

Permanence, fire resistance, low maintenance and operating costs, utility, and beauty were the objectives in constructing this block-long high school. The building is a reinforced-concrete frame with facing of light, warm-toned face brick trimmed with Indiana limestone. It includes some structural-steel construction, steel trusses of wide span and structural-steel column and beam construction being used in both north and south wings. Roof construction is steel-bar joists over which were placed precast, lightweight, concrete slabs. Roofing is 20-year bonded, type AA tar and gravel. Interior partitions are of hollow tile, brick, and glazed tile.

For Economical Maintenance

Low-maintenance features of the building are: washable-tile wainscotings in corridors, assembly, gymnasia; slate window sills; terrazzo stairs, entrances, and washroom floors; marble toilet and shower partitions; insect-proof and dustproof lighting fixtures; bonderized steel sash; projected type windows that are washable from the inside. Classrooms are equipped with double-hung shades of durable, washable, unfilled duck in natural color. Asphalt-tile floors for the assembly, cafeteria, and chemistry laboratory and linoleum-tile floors for corridors, classrooms, and library were chosen for their fine appearance, durability, and economical maintenance.

For Efficient, Economical Operation

The selection of heating and ventilating systems and lighting fixtures was the result of careful study and search for the most efficient and economical. The heating system selected and installed is vapor steam; radiators are cast-iron, fin type; and all rooms have dual thermostatic controls. Two tubular oil-fired boilers are provided, only one of which is used at a time. In order that low-priced, heavy fuel oil may be used, the 10,000-gallon, underground tank is equipped with pre-heaters. The ease and cleanliness of oil firing and use of automatic controls and safety devices make constant attendance in the boiler room unnecessary.

Unit ventilators supply fresh air in classrooms, and large fans are used in gymnasia, natatorium, locker rooms, assembly, and cafeteria. Air is exhausted to the attic space by means of ducts and fans. Shops and gymnasia are heated by unit heaters.

Classroom lighting fixtures are the semi-indirect type, the lower part being diffusing glass and the upper, clear glass. In most rooms 300-watt lamps are used, providing a light-meter reading of 15 foot-candles. Library, art, music, and printing rooms are provided with 500-watt lamps. Indirect fixtures are used in the library, assembly, and meeting room.

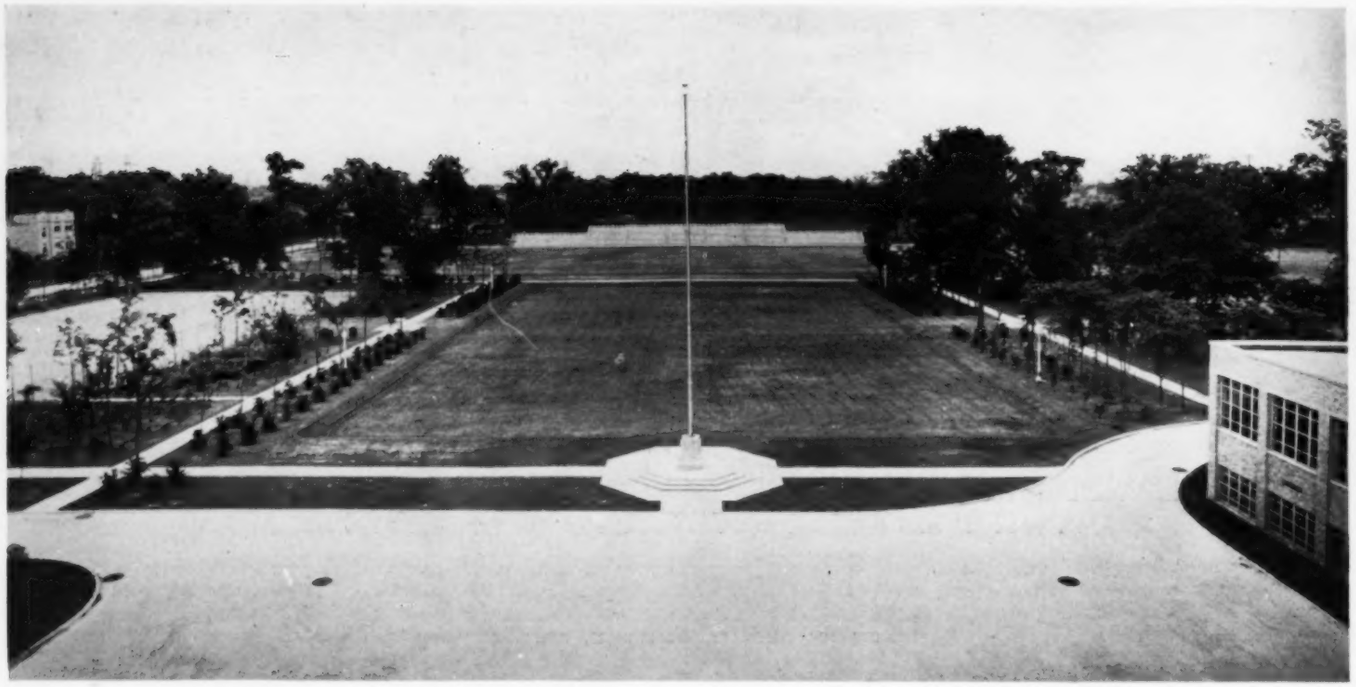
For Utility in Education

The arrangement of the building into three units was decided on because of its convenience and efficiency.

The north unit consists of the assembly room and the library above it. With a kitchen adjoining the assembly room and with a checkroom, ticket booth, men's room, and women's lounge off the lobby, this room is ideal for social activities of the school or community. A fully equipped stage, conveniently located dressing rooms, and seating accommodations for four hundred, make the assembly equally popular for small auditorium purposes. For community use its easy accessibility from street and parking areas is a convenience.

The central section of the building is the academic unit. Offices and commercial rooms are on the first floor. On the second floor are regular classrooms and a large study hall, which is directly opposite the center stairway. Laboratories, workrooms, and a high-ceiling biology growing room are on the third floor. The tower room is reached by a stairway from the science section. A cafeteria to

Left: the foods laboratory equipment is of the best type used in homes. Right: the music room has adjoining it two small practice rooms.



The grounds of the Niles Township High School form a real beauty spot in a community of homes. The view from the rear of the building looks toward the athletic field and bleachers.

accommodate 500 is economically located in the basement. Cooking odors and noise are kept from permeating the building by means of a separate ventilating system and careful arrangement of doors.

The gymnasium and shop unit, where noises originate, comprises the south wing of the building. This unit contains a boys' gymnasium 68 ft. wide and 100 ft. long and an adjoining girls' gymnasium 50 by 78 ft. Permanent bleachers seat 500, and folding bleachers in alcoves will seat an additional 300. Adjacent to the gymnasia are rooms for corrective work, physical examinations, teachers' offices, etc., and stairways to the locker and shower rooms which are also used by swimming classes. A practical feature is a set of doors leading directly outside from the locker rooms to the athletic fields and play areas.

The natatorium has a swimming pool 30 by 75 ft. and bleachers for 250 spectators. Other rooms in this unit are the industrial-arts laboratories, consisting of three connecting rooms divided by windows and glass-paneled doors and equipped for printing, wood shop, metalcraft, auto-repair, and electrical work; boiler room; art rooms; and a music room.

Unique Features

A two-way public-address system from the office to all rooms and corridors is used for announcements and replies, conversation thus being made possible between the office and one or more rooms. Radio programs, automatic playing of phonograph records, and amplification in the gymnasium and assembly are further uses of this system.

A musical chime tone controlled automatically by the master program clock and broadcast over the public-address system is the pleasing class-dismissal signal used throughout the building except in the noisy section where bells are necessary.

The long metal counter in the main office has, in addition to ample filing space, drawers instead of boxes for the teachers' mail and bulletins.

Having wardrobe lockers in teachers' rest rooms, located on the first floor near the office, is both far more convenient and economical than the usual practice of providing a wardrobe closet in each classroom. In both the men and women's rooms, lockers are arranged in alcoves, with provision for the installation of more.

The locker rooms for gymnasium classes are further evidence of the economy of good arrangement. The girls' locker room has its 482 lockers arranged to form dressing booths. Lockers form two sides, a metal panel the third, and a curtain the fourth side. In the boys' locker room the 12 by 12 by 36-in. lockers are arranged six in a section with one 12 by 12 by 72-in. locker. There is space for 300 lockers to be added to the 368 now provided. The girls' locker room has 24 individual showers; the boys' has a runway shower.

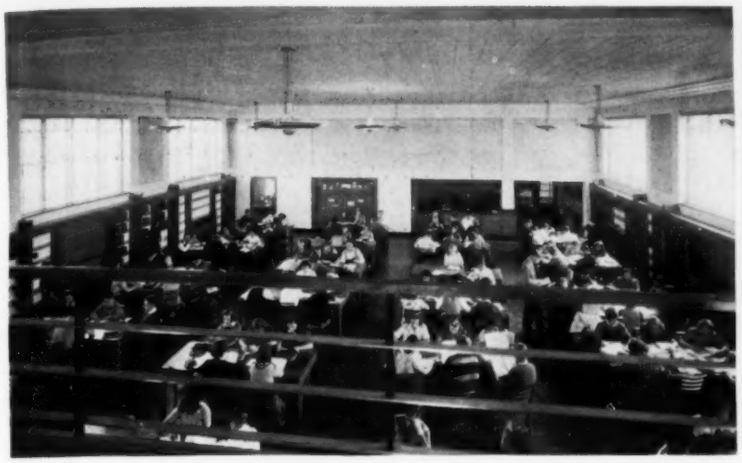
The girls' and boys' gymnasia are so arranged as to serve as an auditorium seating 1,800. The girls' gymnasium, being three feet higher than the boys, becomes the stage when the folding partition dividing them is run back on overhead tracks to form a cyclorama at any one of three different depths.

Glass blocks on the east, south, and west walls of the gymnasium and the south wall of the natatorium take the place of windows with the added advantage of admitting light without glare.

The acoustic ceiling in the natatorium is unique in its installation. Heavily galvanized T-bar runners were suspended from the concrete ceiling with monel wires. Then grooved acoustic tiles of asbestos cement were slid along the runners to form a continuous ceiling unmarred by strips or any other evidence of the manner of installation.

The serving room off the cafeteria has a stainless-steel counter 40 ft. long with pro-

Board of Education, Niles Center, Illinois.—Seated from left to right: R. E. Cotanche, Superintendent; Raymond C. Klehm, Secretary; Mack D. Falknor, Member; Mildred E. Tess, President; Ivan M. Paroubek, Member; Peter J. Kluesing, Member; Frank Ambler, Member.



Left: the library as seen from the balcony which is above three conference rooms. The charging desk at the main entrance gives the librarian easy control of the room. Right: basketball games attract capacity crowds requiring the use of 1,800 seats.

visions for extensions as needed. The floor in this room is greaseproof asphalt tile.

The foods laboratory is arranged in units. Each unit is equipped with a table-top gas stove, monel-metal sink, a table and four chairs, cabinets, and stainless-steel-topped worktable. In place of the traditional model apartment, a practice dining room is provided.

The spacious library has four conference rooms for small study groups. Glass-paneled doors and windows make for easy supervision.

Special features of the music room are two glass-enclosed practice rooms, ample storage space for instruments, and direct access to the girls' gymnasium or stage.

Adjoining the art room are rooms for storage, electric kiln, paint spraying, and also a teachers' workroom.

Included in the office suite is an oak-paneled room 14 by 22 ft., used for meetings of the board, teachers, or committees.

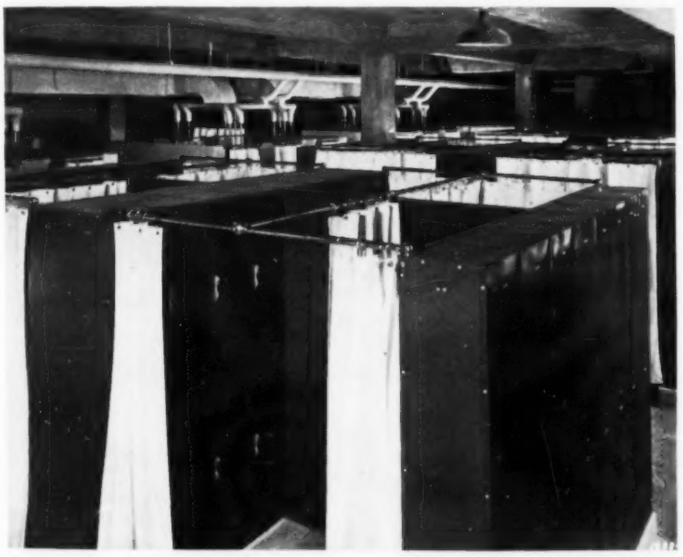
Folding gates at either end of the academic section are especially useful when either unit is used for after-school activities and there is need to restrict the use of the building to one section.

"Those Added Touches"

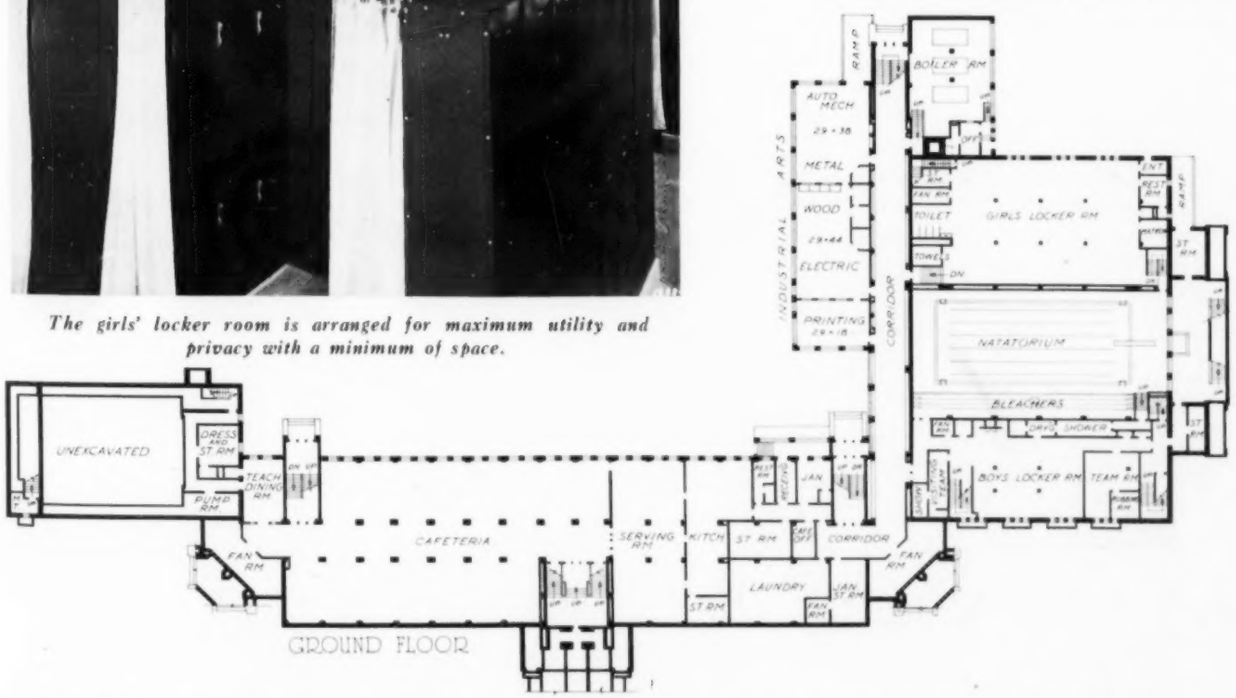
"Added touches" are those details that make a school building more than just another institution and add to its beauty. At Niles Township they are the evidences of the discrimination exercised by the board of education and their advisers in planning and making selections thoughtfully and conscientiously. Usually these distinctive features involved little or no additional expense, the cost being the time and energy required to attain an artistic, harmonious result.

The building being designed in modern style, simplicity is the keynote to its beauty. Decorative features of the exterior are the unusual design of the tower; aluminum doors, fascia, and lettering; aluminum lighting fixtures of very modern design; and the effective use of glass blocks.

The interior is made especially interesting by the use of plaster friezes in the library and



The girls' locker room is arranged for maximum utility and privacy with a minimum of space.



Ground Floor Plan, Niles Township High School, Niles Center, Illinois.— Royer & Danely, Architects, Urbana, Illinois.

assembly, lumiline lighting in the cove ceiling of the two-story main-entrance lobby, suspended ceilings with flush lighting fixtures in the corridors, concealed heating pipes, recessed convector-type radiators, and excellent cabinetwork and oak trim.

Care has been taken to keep the color scheme of the building harmonious. In general it tends toward light tans and browns, with a bright, cheerful effect. Woodwork and walls of ivory color make the basement cafeteria a light, beautiful room. Rooms on the west side of the building have wainscotings painted a cool green; those on the east and north, a light tan. The library is in green, having a green marbleized linoleum floor and chair seats of green upholstery. The foods laboratory has a striking color scheme of ivory, red, and chrome.

The assembly room has a plum-colored stage curtain with a modern design in green and gray. The matching window drapes take the place of shades or blinds, being wide enough to draw entirely across the windows.

Instead of the dark colors usually seen, a light, metallic finish has been used for the recessed corridor lockers and also for the folding chairs.

Corridors are brightened by a checker design of tan and brown marbleized linoleum tiles; classroom floors are of subdued shades of Jaspé linoleum tile.

Furniture of modern style is used in the library and office suite. Here and also in the music room, venetian blinds add to the attractiveness of the rooms. Teachers' rooms are equipped with furniture of modern design, chrome in the men's and Swedish modern in the women's.

For the use of the camera club, a darkroom has been provided in what would otherwise have been storage space in the science department.

Broadcasting room and control panel of the two-way public address system.

Instead of using removable locks that, in addition to causing a great deal of record work, mar the fronts of lockers, set-in, master-keyed combination locks have been installed in the corridor lockers.

Screens for the windows of the office suite, cafeteria, and foods laboratory are a practical and thoughtful addition.

A quieting effect is obtained by the use of acoustic-plaster ceilings in corridors, cafeteria, and typing room and acoustic-tile ceilings in the library, assembly, and natatorium. An acoustic-plaster ceiling in the music room and haydite block walls above the wainscoting in the gymnasium improve the acoustics in those rooms.

Guidance Program

To aid in carrying out a guidance program, numerous conference rooms for small groups of students and teachers are available in various parts of the building. Well-equipped classrooms, rooms for social activities, industrial-arts laboratory, and unusually fine recreational and physical-education facilities, both indoors and outdoors, are all of value in the school's guidance work. Facilities for training in public speaking, dramatics, and microphone technique are also provided for in this modern high school.

Flexibility

All equipment is movable except in laboratories, shops, and art rooms. Regular classrooms are equipped with specially designed tablet-arm chairs and with reference tables and chairs. Even partitions are so built as to facilitate changing the size of rooms if the need arises. When more space is required, the addition is planned to extend east from the north wing so that the library will then be in the center of the building. Niles Township's co-ordinated building program not only takes care of the present but looks to future needs as well.

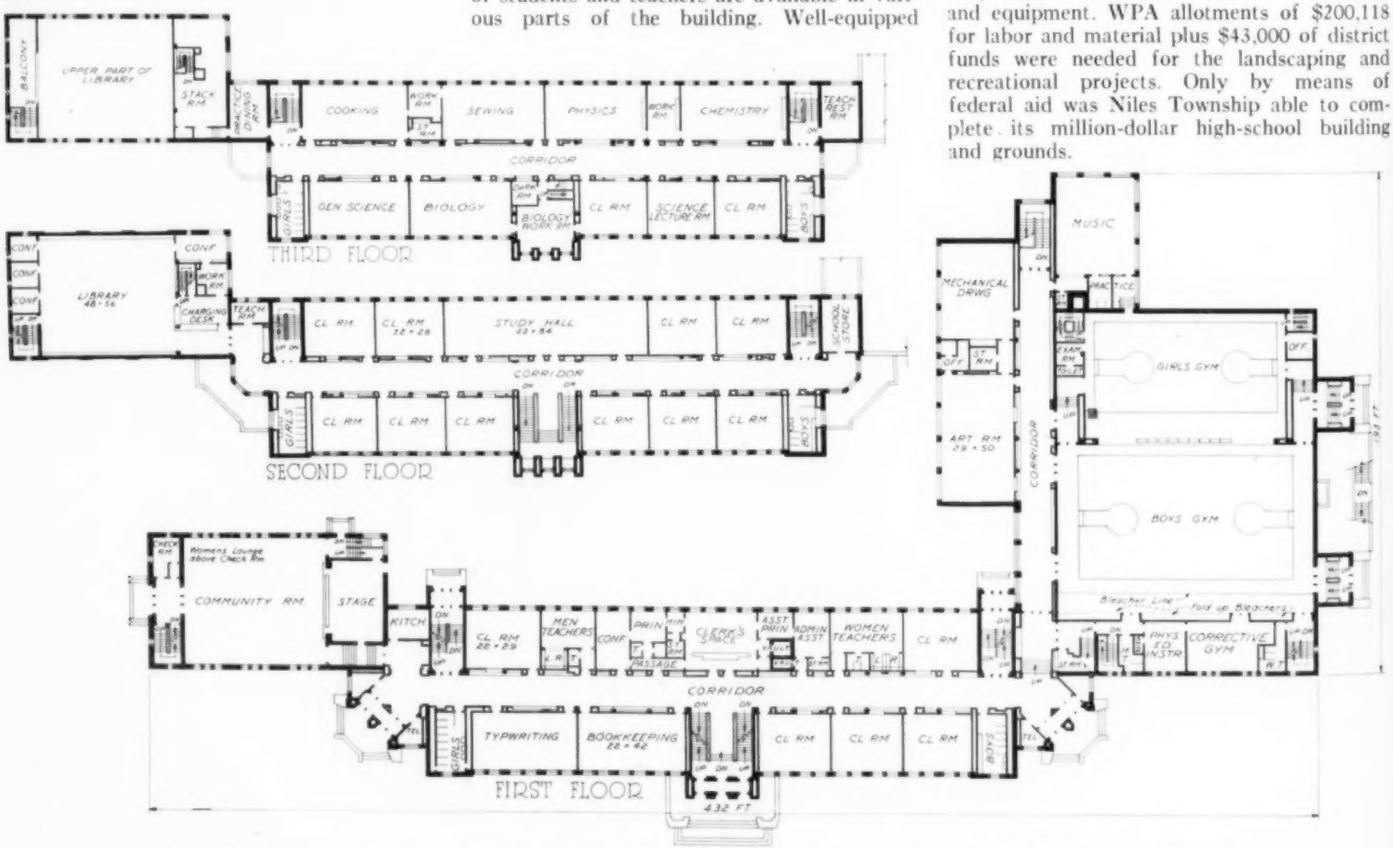
Costs and Financing

The following is a summary of costs and financing of the Niles Township High School:

Construction Contracts		
General	$491,697.58	
Heating and Ventilating	86,992.80	
Plumbing	50,766.58	
Electrical	39,796.05	
Total Construction Contracts		$669,253.01
Miscellaneous — Survey and Material Tests		1,153.10
Equipment		50,000.00
Architects, Consultant, and Attorney		48,225.18
Site		60,000.00

The cubic content of the building is 1,914,130 cubic feet. Excluding fees and cost of furniture, the construction cost per cubic foot is approximately 35 cents.

A bond issue of $510,000 and a PWA grant of $346,909 were used to finance construction and equipment. WPA allotments of $200,118 for labor and material plus $43,000 of district funds were needed for the landscaping and recreational projects. Only by means of federal aid was Niles Township able to complete its million-dollar high-school building and grounds.



Floor Plans, Niles Township High School, Niles Center, Illinois.— Royer & Danely, Architects, Urbana, Illinois.

General Exterior View, Moorhead Junior High School, Moorhead, Minnesota.— Ellerbe & Co., Architects, St. Paul, Minnesota, and Carter & Meinecke, Associate Architects, Moorhead, Minnesota.

A Modernistic Building for a Modern Junior High School

S. G. Reinertsen[1]

The annual school report of the city of Moorhead, Minn., contained in 1928 a recommendation of the superintendent of schools that "there be some definite thought and plan for future pupil housing." For more than ten years the problem of additional space for the junior high school had been begging a solution. The recommendation of 1928 led to an active study of the problems involved, but it was not until early in 1935, that the board of education found it possible to initiate the definite planning of a building and to undertake the financing of the site and structure. Stimulated by the possibility of a federal grant, the board and the executive officers of the schools stimulated interest in the local civic and social organizations and in the newspapers. The plan of calling for a bond issue of $150,000 was given universal approval at the annual school meeting in July, 1935. During the spring the board of education had visited modern school buildings in Middle West cities and had considered the selection of an experienced firm of school architects. When it became clear that the project would be carried, the Ellerbe Company, of St. Paul, was chosen to do the architectural planning. The bond issue was passed by a vote of two to one. The necessary applications for the federal grant were filed, but months passed before approval was received. It was in fact late in the fall of 1936 that telegrams advised the board of the approval of a PWA grant in the sum of $122,715.

Auditorium in the Moorhead Junior High School looking toward the stage.

[1]Superintendent of City Schools, Moorhead, Minn.

While there was general jubilation at the news that the building could be erected, the long delay had created many new problems. Costs had advanced sharply and were still advancing, and when the first bids were opened in February, 1937, it was necessary to reject them because the tenders exceeded the 1935 estimates by more than $75,000.

The second set of bids, opened on March 23, 1937, were such that it was necessary to omit the assembly-room wing. This was done after much deliberation and with only the temporary approval of the State Department of Education. A committee of members of the board waited on PWA and other authorities in Washington, but no encouragement was received for a supplemental grant. Acting on the suggestion of the PWA and of the State Department, as well as of local friends of the project, the board of education called a special election for additional funds. On June 21, 1937, further bonds in the sum of $60,000 were passed, and shortly thereafter contracts were let to complete the building as originally planned with an assembly room and modern equipment.

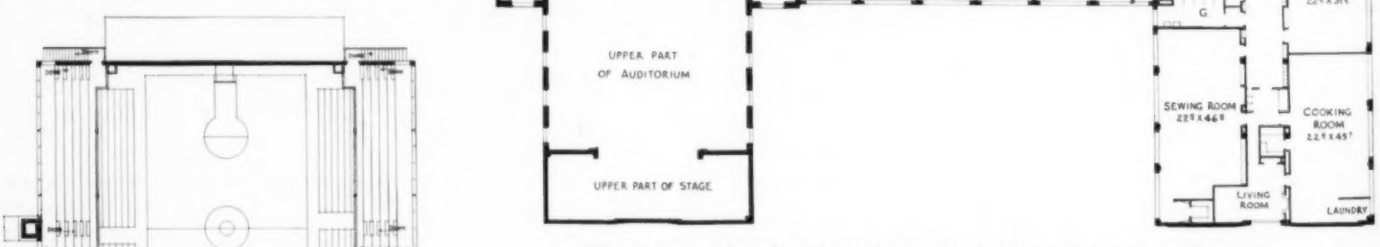
The modernistic exterior of the building faced with brick, ranging in color from light red to dark purple, expresses the stern simplicity of the plan and construction. The classroom section, three stories high without basement, is L shaped, 132 and 120 ft. long. The separate auditorium and gymnasium, totaling 199 ft. in length, form a T wing at the north end of the L. This general plan results in continuous corridor service from the classroom section to the auditorium and gymnasium wings, and permits the complete detachment of either or both the auditorium and the gymnasium for community and recreational purposes. A well-landscaped court makes a pleasing frontage.

There is no basement, except for necessary space for the janitor and boiler rooms. Service tunnels follow the outer walls. The walls are brick; the floor slabs are concrete joists, tile, and clay bricks. The roofs of the gymnasium, auditorium, and top corridors are carried on steel framing with concrete decking. Horizontal lines of copper above and below the windows, as well as copper copings integral with the roof, were used in place of limestone trim. The material emphasizes the streamlines of the building, making it waterproof and contributing to its economy and durability.

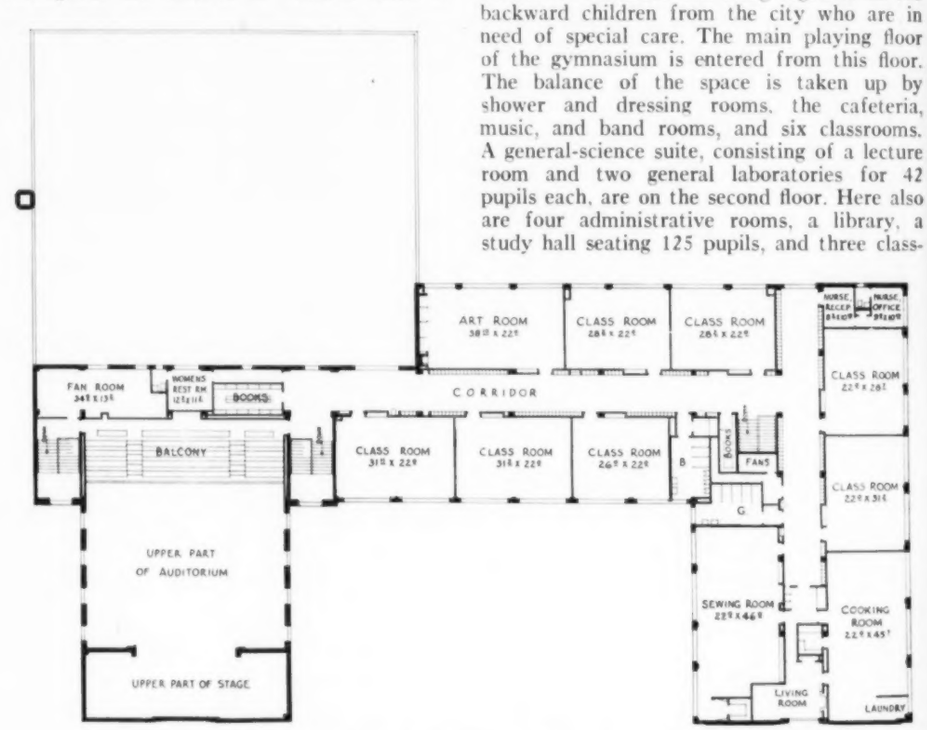
Entry from the west front is through three main doors, framed on each side by rounded pillars of glass blocks, electrically illuminated at night. There are like entrances on the east side of the classroom section, a separate stage entrance, and two entrances to the gymnasium.

Montana rose travertine walls greet one in the main-entrance vestibules. Corridors throughout are finished in vitrified brick of rich buff color to the top of the wainscot line. Stairways, toilets, and the girls' shower stalls are treated with Tennessee gray marble. The floors are covered with moultile in pleasing designs. Terrazzo floors are employed in the entrances, stairways, toilets, shower rooms, home-economics kitchen, and cafeteria kitchenette. More than 62,000 square feet of acoustical tile has been used on the ceilings of the classrooms and corridors, and also in the gymnasium and auditorium. The interior wood trim is oak, the door frames are steel, the window ledges are slate, and the sash are stripped with aluminum. The classroom section is fitted with wood sash, double glazed; the auditorium and gymnasium sections employ steel sash, double glazed.

The first floor, which is at grade level to eliminate inside and outside stairs, provides generous areas for shop and industrial work. The special classes for remedial work are housed on this floor and bring together all the backward children from the city who are in need of special care. The main playing floor of the gymnasium is entered from this floor. The balance of the space is taken up by shower and dressing rooms, the cafeteria, music, and band rooms, and six classrooms. A general-science suite, consisting of a lecture room and two general laboratories for 42 pupils each, are on the second floor. Here also are four administrative rooms, a library, a study hall seating 125 pupils, and three class-



Second Floor Plan, Moorhead Junior High School, Moorhead, Minnesota.— Ellerbe & Co., Architects, St. Paul, Minnesota, and Carter & Meinecke, Associate Architects, Moorhead, Minnesota.



Third Floor Plan, Moorhead Junior High School, Moorhead, Minnesota.

rooms. The main floor of the auditorium is entered from this level. So, too, are the balconies of the gymnasium.

On the third floor are located the balcony of the auditorium, the art room, three rooms of the home-economics department, the nurses' office and waiting room, a rest room for teachers, and eight classrooms.

On each of the three floors there are small rooms for the storage of textbooks and for visual-instruction materials, several janitor service rooms, boys' and girls' toilets. Each of the corridors includes, on every floor, lockers and drinking fountains and recessed display cases. These cases are illuminated electrically and may be moved into the classrooms when exhibits are to be mounted.

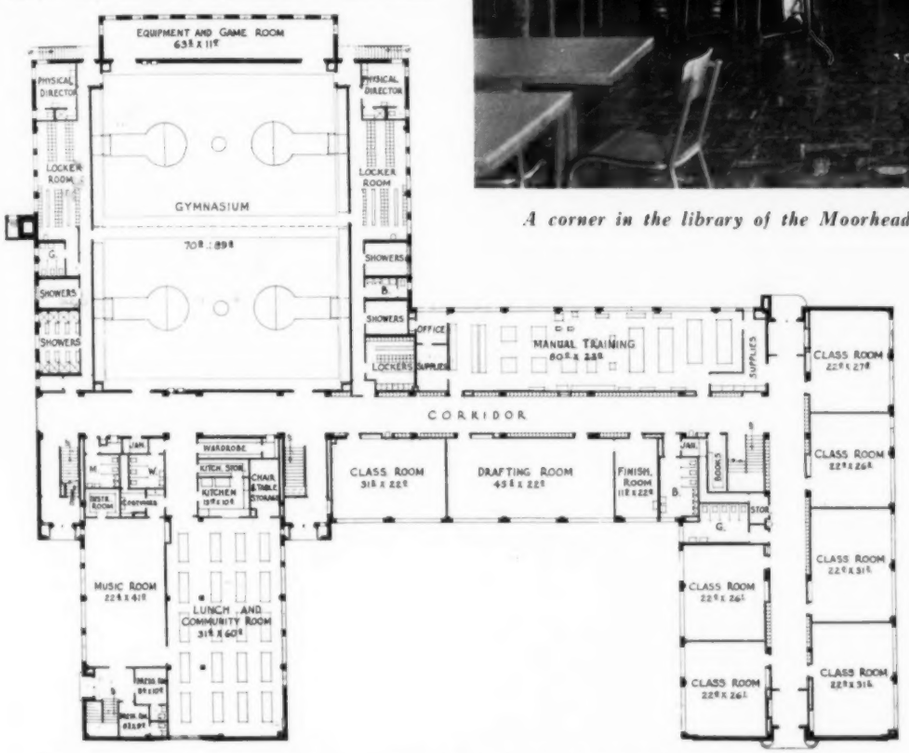
The Classrooms

The typical classroom has plastered walls, painted in light colors, acoustical ceilings, built-in bookcase and cloakroom for the teacher, blackboard display rails, asphalt-tile

floors, two electric-service outlets, and a public-address loud-speaker. Desks are of the pedestal movable type, adjustable posture design. The teachers' desks, with lino type, rounded corners, and birch finish, accompanied by two tubular-steel posture chairs, complete the basic classroom equipment. This being a junior high school, classrooms are somewhat larger than the average. The windows are placed along full length at a height obscuring the level outdoor view of pupils when seated, and extending to the ceiling. Outside interferences are eliminated, and class intimacy is thus preserved.

The Laboratories

Since general science is the only science included in the curriculum, two combination laboratories, 23 by 42 ft., have been constructed, separated by a generous lecture room with the usual raised seating. In each laboratory multiple-unit student tables provide individual spaces for the 42 pupils. All pupils face the instructor, a feature that has proved a boon to the efficient handling of the large classes. Each table or desk is equipped with water, gas, and electricity, governed by master switches and valves located in the adjacent supply room and controlled by the teacher. A large instructor's demonstration table is located in the front of each science room. Live aquariums, one of fresh-water type, the other of salt water, thermostatically controlled, complete the general equipment.



First Floor Plan, Moorhead Junior High School, Moorhead, Minnesota.—Ellerbe & Co., Architects, St. Paul, Minnesota, and Carter & Meinecke, Associate Architects, Moorhead, Minnesota.

The Library

The library, with special reading and workrooms separated by glass partitions, provides a controlled situation. The interior trim and furniture, which are of birch, include the usual charging desk, dictionary, and atlas stand, newspaper and periodical racks, and universal reading tables. The last mentioned have blue linoleum tops and blue-painted steel end panels. Chairs are of the posture type of bent-steel tubing.

The Home-Economics Suite

The home-economics suite consists of three rooms. The sewing room is furnished with 20 two-pupil tables of the universal type, and one large, 108-in. cutting table. The fitting alcove has built-in mirrors. The steel lockers have steel tote trays, forty in a section which are locked up at the close of each period. With several sections available, one is assigned to each class period, the others locked. The food laboratory, which has been called a "symphony in stainless steel," has equipment built of insulated-steel, stainless-steel table tops, stainless-steel sinks arranged in units of four, and the latest type cabinet electric ranges. A laundry nook has a complete built-in tub, electric washer, and mangle, and a double battery of eight drawers equipped with chromium rods for drying. Air is electrically circulated through these cabinets. Connected with the foods laboratory is a model apartment, consisting of combined living and dining room. The apartment is well lighted by a glass-brick wall on one side and contains a fireplace, mantle, bookcases, a large rose mirror, and a built-in wall bed.

A corner in the library of the Moorhead Junior High School, Moorhead, Minnesota.

The Gymnasium

The gymnasium, which is planned for physical education rather than exhibition sports, is divided by a rolling partition for boys' and girls' classes. Folding bleachers and permanent balcony seating provide for about 1,500. The physical directors' offices, with private toilets and showers, are located under the balconies, in connection with the dressing and shower rooms for boys and girls. The dressing rooms are equipped with box lockers to hold the gymnasium suits for the pupils. Street clothes are stored in full-height dress lockers during the one-hour period of physical education. These are locked by the removable combination padlocks from the individually assigned box lockers. Storage space for heavy gymnasium equipment is found in a specially constructed room. One splendid feature of the gymnasium is the direct exit from the dressing rooms to the playing field, one each for boys and girls. Passage through corridors with muddy or wet feet is thus avoided.

The Auditorium

The auditorium, opposite the gymnasium, and housed on the second and third floors, is slightly bowl shaped. The floor is concrete and the aisles and orchestra circle have mastic-tile facing. Opera seats on the main floor and balcony provide room for about seven hundred. The auditorium is acoustically treated and decorated in soft greens and creams. Lights concealed in troughs provide diffused illumination and add to the air of restfulness and simple beauty. Full-length windows, which on the outside are ornate in simple fluted copper now mellowing, are beautifully draped with double-lined soft-green velour drapes,

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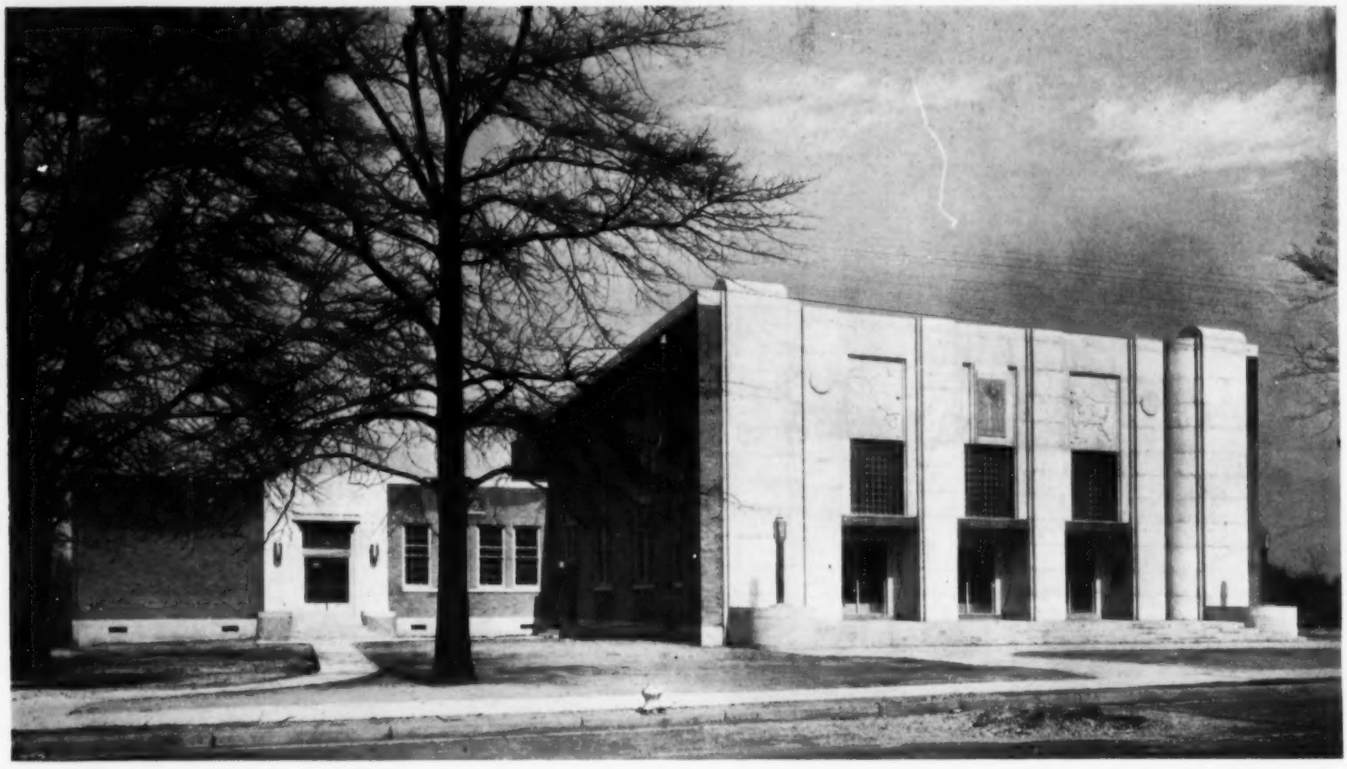


General view of the new Public School building at Senatobia, Mississippi.—Hull & Drummond, Architects, Jackson, Mississippi.

Planned for Activity Program

Senatobia Builds 10-Grade Building

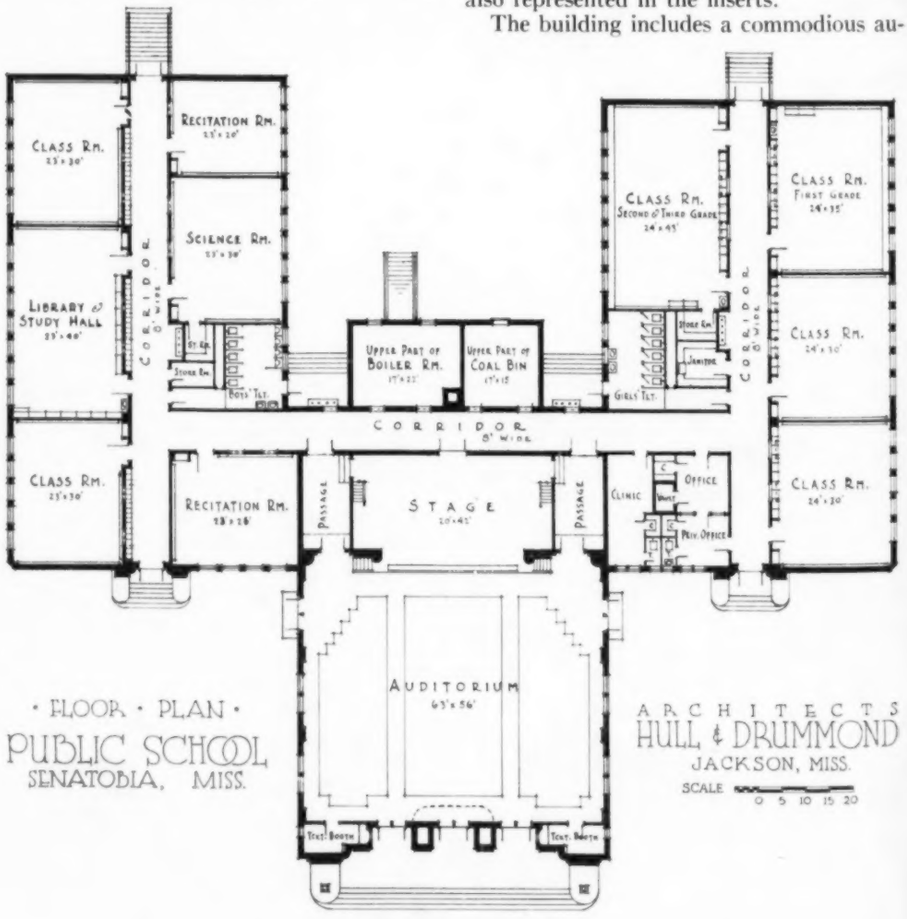
W. G. Eckles[1]

The new building for the Senatobia, Miss., Public School is considered one of the most interesting school buildings constructed in the state with PWA aid. It houses grades one to ten.

In planning the building, care was exercised to adapt it to Senatobia's own activities program for the elementary grades. The primary rooms are so arranged as to provide for at least four "centers of interest," the "reading center" and the "art center" toward the rear of the room, and the "science center" and "news center" toward the front of the room. For the "reading center" a bookcase for pupils' books, a reading table, and chairs are provided. For the "art center," a lavatory and wall easels or multi-use blackboards are provided. For the "news center" a large bulletin board is provided, as is an aquarium for the "science center."

The primary rooms are equipped with wardrobes, bookcases, teacher's cases, cabinets for teaching supplies and materials, cubicles for pupils' materials, in addition to blackboards, bulletin boards, and other usual features. A feature of the primary rooms is the battleship-linoleum floor covering. Colored inserts in the linoleum floor add greatly to the appearance of these rooms, as well as to their usefulness educationally. These inserts were so designed that they can be used in playing "bean bag in the circle," "eraser in the ring," and other games which can be played in learning number combinations. Two Mother Goose figures, the goose and the rabbit, are also represented in the inserts.

The building includes a commodious au-



[1]Director of School Building Service, State of Mississippi.

The auditorium entrance of the Senatobia Public School has interesting sculptural panels representing modern science and modern culture. The sun dial is worked out in cast aluminum.

ditorium projected to the front. This arrangement makes it very convenient for the auditorium to be used for various community meetings without interference with the usual school program.

Other facilities include a library, a science room, a cafeteria, a clinic, toilets, storerooms, and administrative offices.

The orientation of the building is considered ideal. It faces south.

Details of Senatobia School Building

Superintendent of schools — Mr. L. W. Tanner.
Architects — Messrs. Hull & Drummond, Jackson, Miss.
Construction — Begun December 15, 1937; building occupied September 15, 1938.
Site — Principal frontage, 275 ft.; depth, 600 ft.
Auditorium — Size, 63 by 55 ft.; seating, 500.
Cafeteria — Size, 30 by 50 ft., approximately.
Exterior — Press brick and cast-stone trim.
Construction — Concrete floor slab, with wood finish floors.
Corridors and stairs — Plaster walls and ceilings; terrazzo floors and stairs.
Classrooms — White plaster walls and ceilings, edge-grain pine floors and hardwood trim; slate blackboards, fiber bulletin boards, movable seating, multi-use blackboards and display boards.
Auditorium — White plaster walls, calicel acoustical ceiling, and asphalt-tile floor.
Toilet Rooms — Terrazzo floors, Keene's cement wainscoting, plaster ceilings, and metal toilet partitions.
Heating — Two-pipe vacuum steam; unit heaters, fitted with automatic temperature control.
Electrical equipment — Semi-indirect lighting fixtures; standard program-clock and fire-alarm systems.
Plumbing fixtures — Flush-valve toilets, chinaware urinals, enamelware washbowls.
Cost — Building construction, $90,000; equipment, $7,500. Total cost, with fees, landscaping, etc., $104,000. Cost per cubic foot, 21 cents.

The modern design which characterizes the exterior of the Senatobia Public School has been splendidly carried into the auditorium which serves not only for school use but for a widely appreciated community center.

A night view of the Macomber Vocational High School, Toledo, Ohio.—Edwin M. Gee, architect for the Board of Education, Toledo, Ohio.

Toledo Builds Vocational School for Boys

R. S. Wenzlau[1] and Carl T. Cotter[2]

The Irving E. Macomber Vocational High School was officially dedicated with appropriate ceremony September 29, 1938. Coincident with this dedication, the Jessup W. Scott Manual Training School, occupied and dedicated in 1885 and which for 53 years served well its purpose, passed into history.

The new school is named in honor and memory of the late Irving E. Macomber, a prominent citizen of Toledo who served as a member of the board of education and who had a large and sincere interest in civic enterprises and particularly in the welfare and education of the youth of the city.

Located on the site of the original Macomber homestead, the building occupies a position on the fringe of the downtown business district easily accessible from all parts of the city by ample and direct transportation facilities.

Application for the construction of this building was made under PWA in June, 1935, along with a number of other school projects, but the actual approval of the grant was not made until October, 1936. While some preliminary planning had been done between these dates, a change from the original site to its present location necessitated a com-

The machine shop is equipped with the latest type of tools so that apprentices and day students as well as mechanics may be trained.

[1]Director of Schools, Toledo, Ohio.
[2]Director of Vocational Education, Toledo, Ohio.

plete change in plans. The project was started January 1, 1937, with the clearing of the site. The general contract was let to the H. J. Spieker Company and construction was started in June, 1937, and the building completed for occupancy with the opening of the school term September, 1938.

Plans and specifications were prepared in the Department of Architecture of the Toledo Board of Education. Edwin M. Gee, supervising architect, William E. Hallauer, structural engineer, Gil Southern, electrical engineer, I. E. Snyder, plumbing engineer, L. U. Bruyere, architect and designer, C. T. Cotter, director of vocational education, R. S. Wenzlau, director of schools. The heating and ventilating plans and specifications were prepared by S. L. Lewis, heating and ventilating engineer, Chicago.

Realizing that this structure was to house a strictly trade vocational program for boys and men and that it would have to serve the needs of the community for years to come, every effort was made to incorporate in it the latest features and developments in structure, materials, facilities, and equipment and also to anticipate future educational trends.

This was accomplished without extravagance and with a simplicity of design that presents a decided departure from the traditional high-school plant and makes it one of the outstanding vocational high schools of the country.

The fact that the board of education maintained its own department of architecture and a staff of engineers experienced in school design, made it possible for the vocational department to keep in close contact with the development of the plans and to incorporate all the facilities and equipment peculiar to this type of an educational setup. The director of the vocational department was given a full-time assignment to this project for this purpose and remained with it from its inception to its final completion.

The educational facilities were based:

First, on a definite curriculum and class program, covering sixteen different trades in the fields of industry, transportation, building construction, graphic arts, and commercial work, meeting the requirements of the Ohio Plan for Vocational Education under the Smith-Hughes and George-Deen Acts, a school day of six clock hours, a week turnabout between shop and related classes, a standard class unit of 30 persons, a school year of 38 weeks, an entrance requirement of ninth-grade completion in a junior or senior high school, and a three-year term (grades 10, 11, 12) for graduation.

Second, on an evening trade-extension program of four nights a week, and an apprentice program using the building facilities on Saturday mornings and late afternoons.

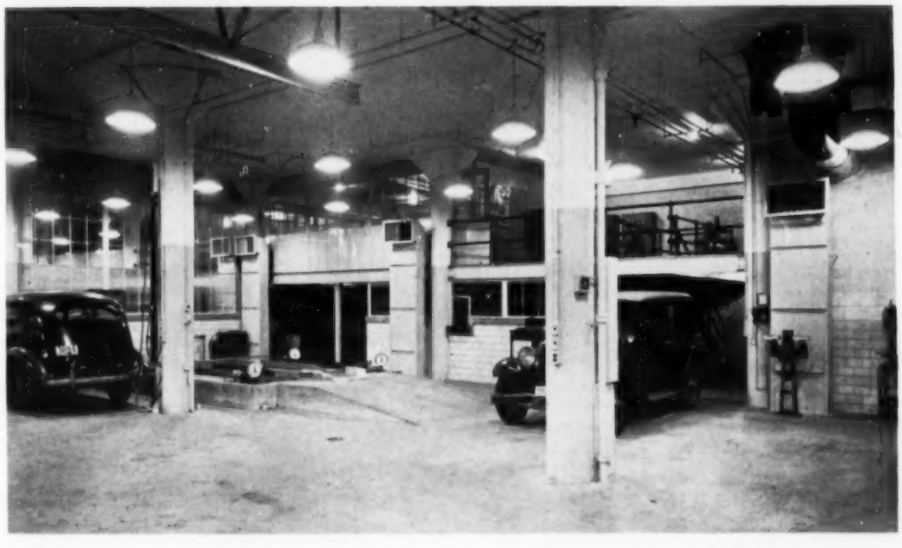
Third, a maximum capacity of 1,200 all-day trade students for boys only, and 2,000 evening students on a two-evenings-a-week shift.

All of which resulted from a careful study of local conditions and past experience in this and other cities by the administration and faculty of the school, the organization of which this new building was to accommodate.

The building occupies an entire city block with a frontage of 196 ft. on Monroe Street, a main thoroughfare to the downtown business area.

The building, extending back some 200 ft., is three stories high and is constructed on steel frame with concrete slab. In this portion

The welding shop is equipped with the latest devices used in production shops.



A corner in the auto mechanics shop.

The advanced machine shop is equipped with the highest grade precision machines and is adequately lighted for both day and night use.

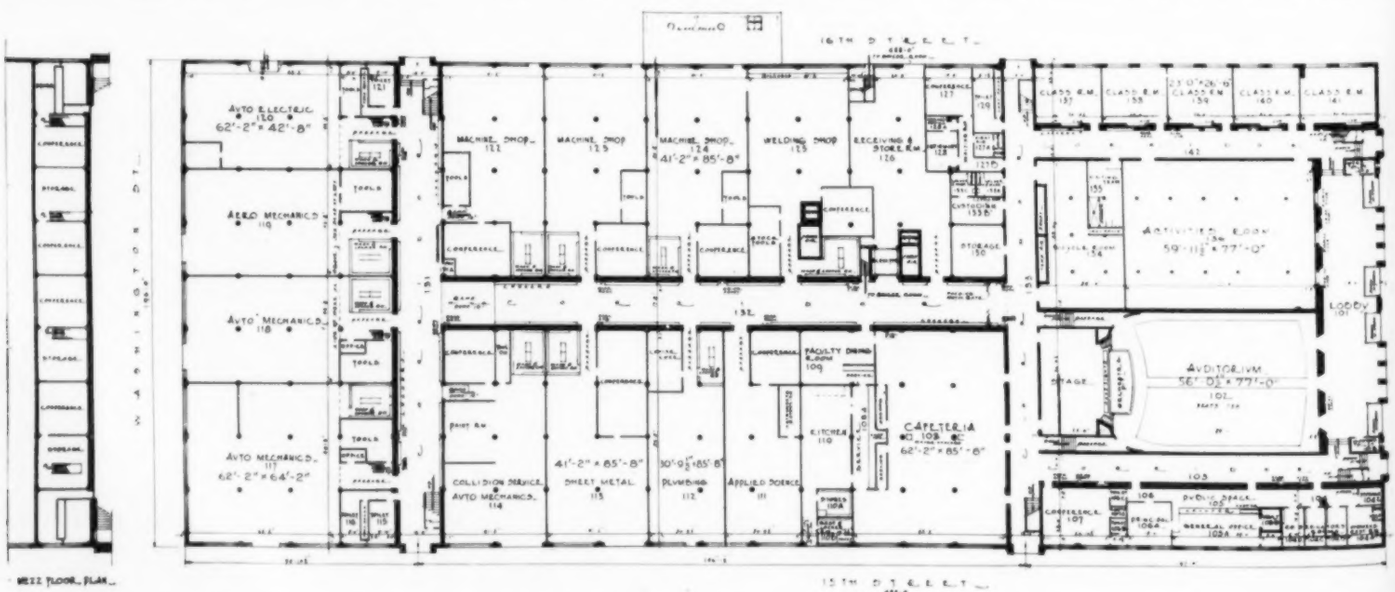
The printing room of the printing department has a battery of four platen presses and one cylinder press. Space has been allowed for further cylinder press equipment.

of the building, separated from the shop sections by transverse corridors, are the auditorium, gymnasium, related classrooms, and administrative offices. The balance of the building, extending 288 ft. to Washington Street, is two stories high and is of factory-type reinforced-concrete columns and flat-slab construction. A central longitudinal corridor terminates in two transverse corridors at the ends of which are four entrances and stairways. The shops, drafting rooms, library, lunchroom, first-aid unit, and related-science laboratories enter on these corridors. All shops on the first or ground floor are provided with outside service doors. A two-ton freight elevator convenient to the receiving and storeroom serves the shop section.

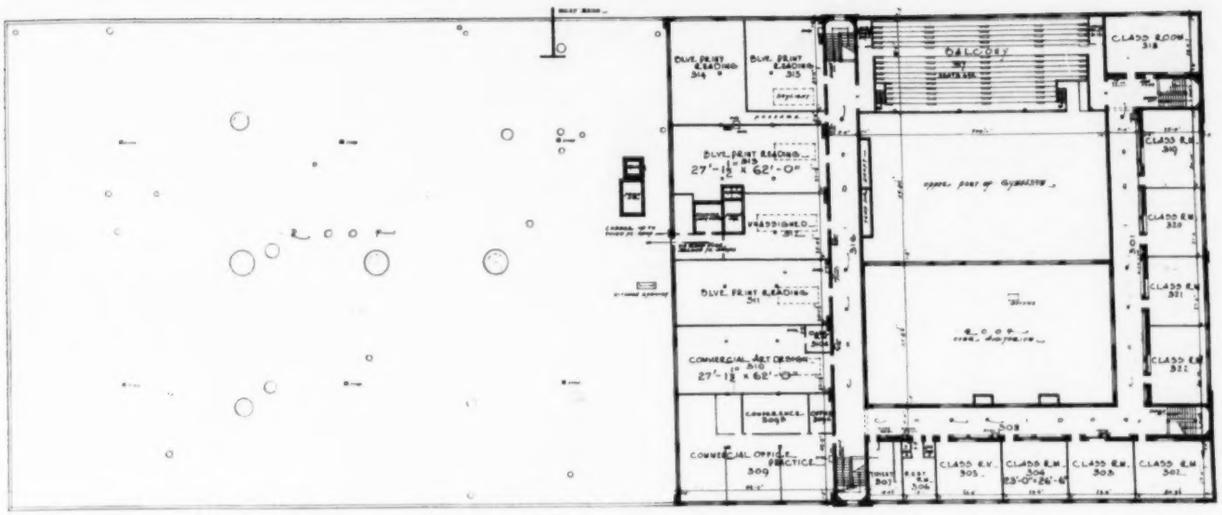
There are 25 related-subjects classrooms, 23 trade shops, 7 related-science laboratories, 4 blueprint-reading rooms, 1 auditorium (seating 948 persons), 1 gymnasium (60 by 100-ft. floor) with observing gallery seating 600 persons, 1 library with a capacity of 9,000 volumes and 132 persons, 1 first-aid and hygiene unit, 1 cafeteria lunchroom (seating 550 persons), 1 faculty dining room for 60 persons. Rooms for the following specific uses are provided: activities, bicycle storage, receiving and stores, stationery sales, stage-equipment storage, book storage, mimeographing, and editorial.

The exterior of soft colored variegated buff brick, with appropriate trim of Indiana limestone emphasizing horizontal lines, lends a dignity to the structure indicative of its purpose and use.

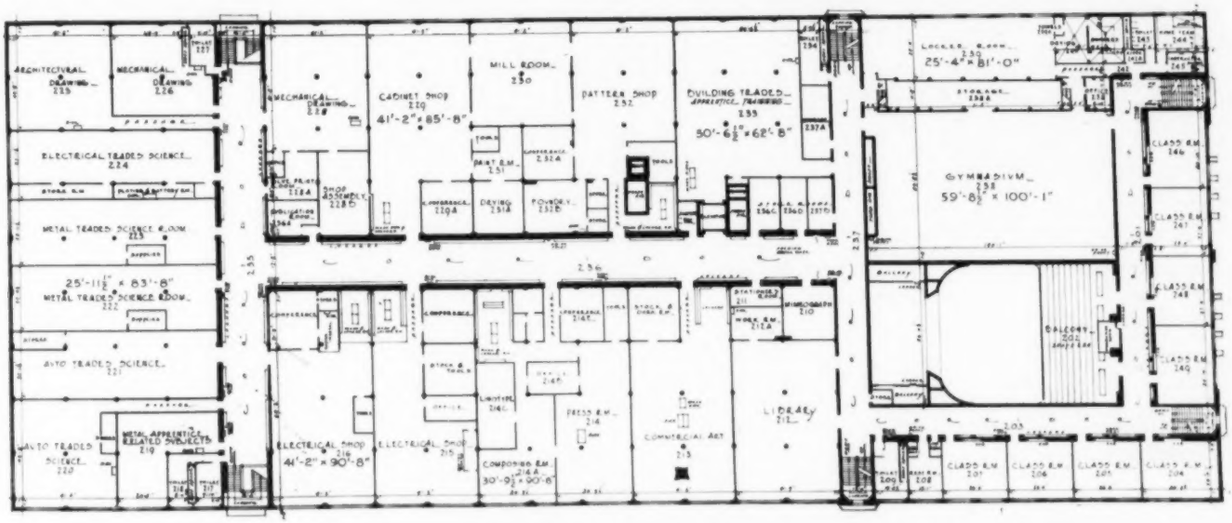
The front on Monroe Street both within and without features the architectural effect, while the shop portion suggests a factory type of



First Floor Plan, Macomber Vocational High School, Toledo, Ohio.—Edwin M. Gee, Supervising Architect, Department of Architecture, Board of Education, Toledo, Ohio.



Third Floor Plan, Macomber Vocational High School, Toledo, Ohio.



Second Floor Plan, Macomber Vocational High School, Toledo, Ohio.—Edwin M. Gee, Supervising Architect, Department of Architecture, Board of Education, Toledo, Ohio.

treatment. Steel sash are used throughout. Entrance frames, doors, and spandrels are of aluminum. Over the several entrances are stone panels in bas-relief, representing man's discovery and use of the natural elements and materials and processes of industry.

The auditorium was designed and placed to serve the general public as well as the school. It is accessible through a large and well-proportioned lobby across the front of the building and has six entrance doors at sidewalk level. Flanking these doors are four large show or store windows visible from the lobby as well as the street. The work of the school is exhibited in these windows.

The problem of noise interference and transmission was met by locating the shops in one area and related classrooms in another; by the use of fiberboard ceilings in all corridors and related classrooms and acoustical panels in the auditorium, library, activities room, commercial-office practice shop; by the grouping of shops in relation to the nature of the work done therein, and by the use of battleship-linoleum floors in corridors and related classrooms. The gymnasium and auditorium being adjacent were insulated by independent structural framing and separate

A student welder at work.

cinder block walls with 4-in. air space between. The auditorium walls were treated on the inside for sound isolation with a mineral-fiber material.

The heating and ventilating plant presents a marked departure from previous local practice in that hot water under forced circulation is substituted for steam both in the tempered air and in the direct radiation. After a year's operation, this system has proved to be the most economical and efficient of all the local school plants. Provision has been made to heat the new Girl's Trade School now being built on the adjacent block from this heating unit.

The problem of flexibility for possible future curriculum changes was met by running all service supply lines, such as heating, plumbing, electrical, etc., in the open and keeping all fixtures and controls as far as possible off the partitions separating shop units, and further by using glazed-steel sash as nonload-bearing partitions supported by brick wainscots. This also has aided the daylight lighting of the shops, which for the most part are twice as deep as wide, being approximately 41 by 85 ft., before being

(Concluded on page 114)

General Exterior View, Appleton Senior High School, Appleton, Wisconsin.—Smith & Brandt, Architects, Appleton, Wisconsin, and Eschweiler & Eschweiler, Associate Architects, Milwaukee, Wisconsin.

Appleton, Wisconsin, Builds for Beauty and Utility

Werner Witte[1] and Herbert Helble[2]

Appleton's new senior high school, one of the finest in the Middle West, has completed its very busy and interesting first year with an enrollment of 1,465 pupils. The huge structure is built on a triangular, fifteen-acre tract. The building consists of four distinct but connected units. It is three stories high and its classrooms will accommodate 1,800 students. To walk around its outer foundation would require traveling slightly more than one-half mile.

The building is said to be "modern without being modernistic." The walls are of reddish-tan Waupaca brick and salmon-colored artificial-stone trim. Flanked by auditorium and gymnasium, the entrance to the academic wing is through a four-story-high tower of massive design. Spacious lawns and shrubbery, now being completed, will soon enhance the exterior beauty of the building.

The area at the rear of the structure includes a football field encircled by a quarter-mile cinder track, a separate intramural field with space for two softball diamonds, archery and horseshoe courts, and eight concrete tennis courts. These three fields are all properly fenced with cyclone fence.

The building is the result of many years of

The Appleton Senior High School library is arranged so that the centrally located charging desk enables the librarian to control the entire room.

[1]Assistant Principal, Appleton High School.
[2]Principal, Appleton High School, Appleton, Wis.

study on the part of the board of education and the faculty of the school. Several years prior to its erection the faculty studied modern school needs and buildings. Members visited a number of modern schools within a wide area. The staff of each department planned for its own needs and developed what members of the department and experts in each field considered the best. These ideas were finally woven into a general set of plans which were turned over to the architects who were chosen to design the building.[3]

Each department consists of closely grouped rooms with an office somewhere within the group. The commercial suite is on the first floor of the academic unit in close proximity to the general school office. Directly across from the school office is the dental and medical suite, consisting of four interconnecting rooms plus waiting rooms, storage cabinets, and toilets. The office of the dean of girls is adjacent to the clinic.

Library and Study Halls

The library, flanked on each end by a study hall seating 160 pupils each, occupies the entire front half of the second floor in the academic unit. The beautiful reading room is 120 by 24 ft. and will accommodate 140 students. It is equipped with venetian blinds which enhance the beauty as well as aid in giving correct lighting. The floor is hardwood blocks and is noiseless. The ceiling is acoustically treated. At present the library has over ten thousand volumes. Windsor and leather upholstered chairs, as well as several sizes of rectangular and round tables, help to create an informal, living-room atmosphere. The other half of the floor is occupied by the English and social-science departments, each room containing built-in bookcases, cupboards, and magazine racks of oak. This makes a splendid arrangement since the library is thus easily accessible to the groups which need it most.

The third floor houses home-arts, science, mathematics, and art departments. The last mentioned consists of a suite of three rooms and an office. Special features are spacious bulletin boards and built-in lockers; the latter will accommodate drawing boards and other student materials without crowding.

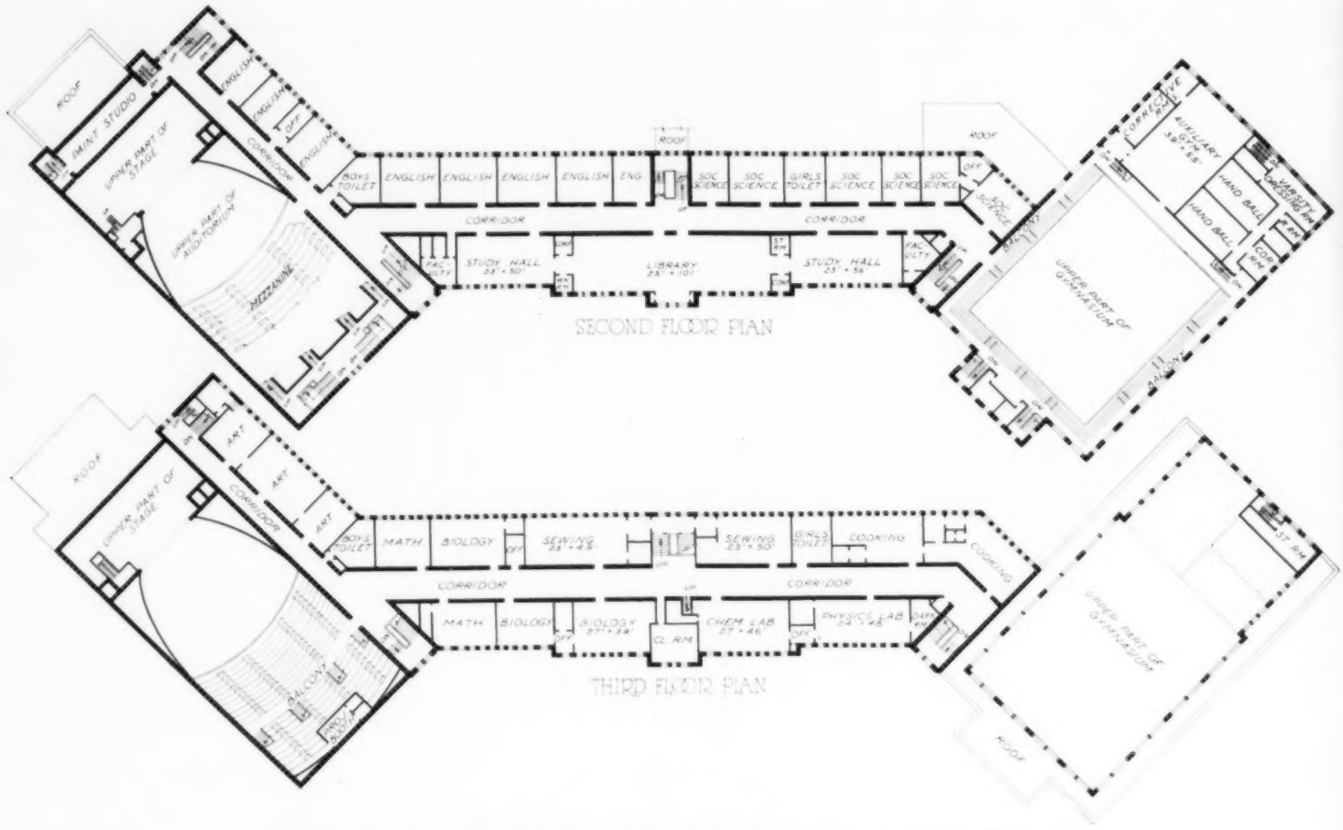
The cafeteria is housed on the first floor of the academic unit and is adjacent to the gymnasium. This arrangement permits large groups to be served in the gymnasium when that is necessary; although the cafeteria alone will seat nearly 300. Monel-metal counters and fixtures, marbleized tile floor, acoustically treated ceiling, walls of architects' tile, and linoleum-top tables add to the beauty and cleanliness of the cafeteria.

Hailed by all visitors as an innovation is the Early American room. This is on the first floor and is accessible from the office, the main corridor, and from the outside. It is designed to be the social center of the school. It is fitted with a small kitchen, cloak and storage facilities, and toilet. Living-room furniture, rugs and draperies, fireplace, wall pictures, a number of genuine antiques, and walls finished in knotty pine contribute in giving this room a most attractive and inviting appearance. This room can be used without going into the remainder of the building. School clubs and organizations made frequent use of these facilities during the past year.

[3]Described in "Our Most Successful Teachers' Meetings," *Journal of the N.E.A.*, November, 1936.

Main entrance to the Appleton Senior High School, Appleton, Wisconsin.—Smith & Brandt, Architects, Appleton, Wisconsin, and Eschweiler & Eschweiler, Associate Architects, Milwaukee, Wisconsin.

The balcony seating in the Appleton Senior High School gymnasium is supplemented by folding bleachers on both sides of the playing floor.



Second and Third Floor Plans, Appleton Senior High School, Appleton, Wisconsin.

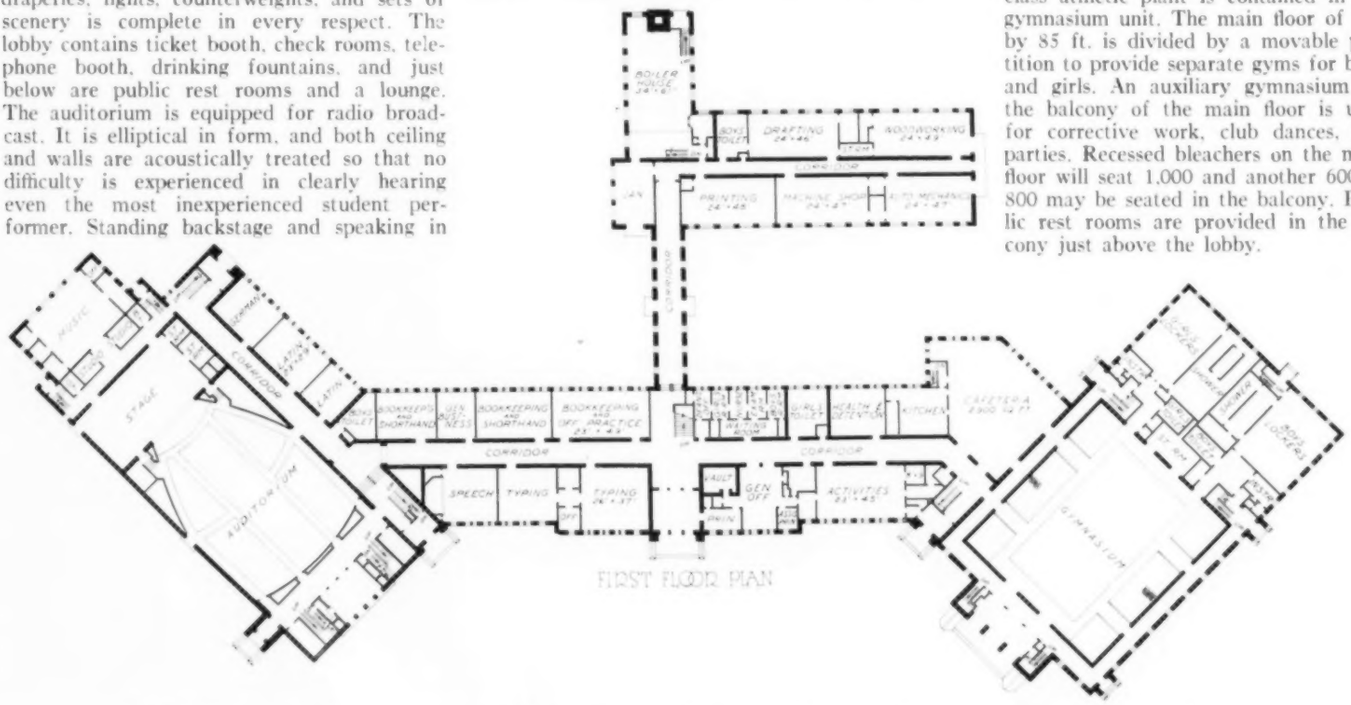
Auditorium is Large

The auditorium is one that in size and appointments compares with the best in the state. The huge unit is 220 by 181 ft. and will at present seat 1,672 in fine cherry-red upholstered chairs; more could be accommodated if necessary. The stage is 78 ft. wide and 34 ft. deep and its equipment of switchboard, draperies, lights, counterweights, and sets of scenery is complete in every respect. The lobby contains ticket booth, check rooms, telephone booth, drinking fountains, and just below are public rest rooms and a lounge. The auditorium is equipped for radio broadcast. It is elliptical in form, and both ceiling and walls are acoustically treated so that no difficulty is experienced in clearly hearing even the most inexperienced student performer. Standing backstage and speaking in a normal voice one can be heard in the projection booth at the rear of the auditorium, a distance of 162 ft.

Back of the stage is the band and orchestra rehearsal room. The walls and ceiling are acoustically treated so that sounds do not escape from the room. Acoustically treated doors and double glass in doors and windows further deaden sound. Along its walls are six individual rehearsal chambers and two offices. The former permit individual lessons and rehearsals. Below the stage are dressing rooms, showers and toilets, storage and repair quarters, as well as a large chorus and recreation room.

Gymnasium is First Class

Everything that goes to make a first-class athletic plant is contained in the gymnasium unit. The main floor of 100 by 85 ft. is divided by a movable partition to provide separate gyms for boys and girls. An auxiliary gymnasium off the balcony of the main floor is used for corrective work, club dances, and parties. Recessed bleachers on the main floor will seat 1,000 and another 600 or 800 may be seated in the balcony. Public rest rooms are provided in the bal cony just above the lobby.



First Floor Plan, Appleton Senior High School, Appleton, Wisconsin.—Smith & Brandt, Architects, Appleton, Wisconsin, and Eschweiler & Eschweiler, Associate Architects, Milwaukee, Wisconsin.

Upper left: cooking laboratory showing lecture and library corner. Upper right: a sewing room. Lower left: extra-curricular activities room which is used for informal conferences, student gatherings, and community purposes. Lower right: a physics class in session.

Glass brick instead of windows, acoustically treated ceilings and walls, split maple floor, and scientifically designed lighting and ventilation are additional features.

A corridor, with shuffleboard courts tiled into the colored concrete floor runs completely around three sides of the gymnasium. This permits spectators to come late and leave early and never step on the main playing court. Other facilities include two offices, rooms for dressing, showers, toilets, rubdown, and lecture rooms; separate quarters for teams with their own showers, drying and storage rooms; a training room, two handball courts, game and recreation room, towel rooms, electric scoreboard, and broadcasting equipment.

Manual Arts Long Popular

The Appleton High School was one of the first to add manual arts to its program, having first presented it in 1885. The manual-arts unit is located directly back of the academic unit and connected by a corridor which leads from the main entrance of the building. Between it and the main wing is a concrete court which is equipped with stands for over 500 bicycles. The manual-arts unit is of factory-type construction, a single story high, and has the advantage of keeping the whir of the saws and the ring of the anvils from reaching the other units of the building. Ample light is provided by windows of the factory type and electric lights of the latest shop design. The heating system for the shops is the univent type. The shop floors are of end-grain wood block except in the forge shops where concrete was used for better fire protection. The mechanical-drawing room has an asphalt-tile floor of the design used in the corridors. As in the rest of the plant, all walls are painted, and even though the unit is of the factory type, it presents a well-lighted and pleasant group of rooms in which to work. The unit consists of drawing room, print shop, machine shop, auto-mechanics shop, woodworking room, washrooms, toolroom, and two offices. Individual pupil lockers are recessed in the walls. Garage-type doors permit trucks and cars to enter the auto and woodshops. In this wing is also located a large delivery and stock room where supplies are uncrated and stored.

Plenty of Heat and Fresh Air

Three 15-ton, low-pressure steel boilers delivering steam to all parts of the building heat the academic and shop sections through direct radiation, and gymnasium and auditorium indirectly. Concealed radiators are installed in the classrooms and most of the other parts of the building, while exposed radiators heat the laboratories, the lavatories, and the shop unit.

The auditorium and gymnasium are heated with air controlled by fans and automatic dampers which allow any percentage of fresh or return air to be used, depending on the number of persons in the rooms. Air in the lavatories, laboratories, cafeteria, and kitchens is exhausted from the building and is not used again as is the case in other rooms where warmed fresh air is circulated with a percentage of used air. The heat-regulation system is so arranged that any unit, section, or room may be heated and ventilated without heating other parts.

Fans, one beneath the gymnasium, two under the academic section, and two under the auditorium control the air system. In addition the air risers have small heat booster units in the basement to reheat air circulating through the building. Twenty-seven fans, ranging from one-half to twenty horsepower each are spotted throughout the structure.

Scientific Lighting

The results of scientific research into all types of school lighting, natural and artificial, were used by the designers of the school. Natural light in the rooms is obtained by nearly 11,000 square feet of window glass and glass blocks. Only on the darkest days does the average room require artificial light.

Lighting fixtures and paint for all walls and ceilings of the various units were chosen to secure the best possible light. Semi-indirect fixtures are installed, with about 10 per cent

(Concluded on page 108)

Housing the Modern Elementary School
I—Instructional Rooms

Stanton Leggett[1]

The determination of prevailing tendencies in the design and construction of elementary-school buildings may well serve as a starting point in any attempt to improve the facilities planned to house the educational activities of children. The theory and practice of education have undergone tremendous changes in the past few decades. The planning of school buildings, in some areas preceding the change in activities and in others lagging seriously behind, should advance with the aim in view of providing the best possible environment to house, aid, and stimulate the educational program of today and tomorrow.

The detail and the statistical analysis which serve as a basis for this summary statement of present practice and trends in the planning of elementary school buildings have been obtained from two studies made at Teachers College, Columbia University[2] one in 1932 and the other in 1939. A total of 43 school buildings were analyzed carefully. The plans of twenty-one buildings in the first study have been compared with the plans of twenty-two buildings of the second study. The wide geographical scatter and the comparative similarity in types of cities submitting plans for study indicate that the results are probably fairly representative of tendencies and prevailing progressive practice in the design of school buildings for elementary-school children in the larger cities of the country.

This article will be concerned with the design of instructional rooms. A later paper will cover the remainder of the spaces of the elementary school.

Instructional Space — General

The design and provision of instructional space reflect the general trends in educational programs as they are found in various schools throughout the country.

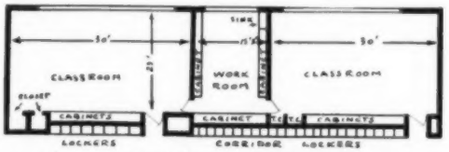
In several schools, small, standardized classrooms were the only type of instructional space provided. Limitations of building space, regardless of any preference on the part of the educators involved, would dictate close adherance to a traditional recitation-discussion type program in those schools. Art, music, or shopwork, as far as the plans of those buildings indicated were not a part of the educational experience of the children housed in those schools.

Instructional space in another group of buildings consisted of classrooms supplemented by a wide variety of specialized rooms such as library, science, geography, art, music, shop, domestic science, and rooms for atypical children. One of these educational plants was designed for use as a platoon school. The ratio of classrooms to specialized rooms in this group of buildings was as high as one to one.

A third group of buildings represented practice more nearly in conformity with advanced educational theory and school-

An elementary classroom for activity type of program.

building thought. Classrooms, in this group, are designed to house most of the activities of the children participating in a progressive program. In these rooms all fields of knowledge and all phases of the school environment could be drawn upon to further the purposes of an integrated program. For this type of educational offering, shop tools and equipment, art, music, and the like must be immediately available in the classroom situation. The classrooms adapted to such a program were considerably larger than the standardized 32 by 22 ft. space. Sinks, toilets, reading alcoves, and workbenches all combine to make these areas useful tools in the achievement of educational objectives. Such spaces were constructed and designed to meet the needs of a dynamic, changing curriculum.



An economical arrangement for an activities program. Two classes share one workroom.

In the third group, the large classroom spaces were supplemented, in some cases, by specialized areas as the library, shop, and music rooms. Here more intensive work than that available in the classroom situation could be carried on with the aid of more specialized equipment and competent instruction.

Taking all classrooms as a group, in both 1932 and 1939, one special room was provided for approximately every three classrooms.

Classroom — Details

The increase in length and width of classrooms has been a major recommendation in classroom design by leaders in the field of school-building planning. The need for more space resulting from a greater degree of pupil activity is a real one. No significant results of the efforts to increase the size of the classrooms were shown in this study.

The median length of classrooms in 21 buildings in 1932 was 31 ft. 6 in. In 1939 in 22 buildings the median length was 32 ft. This is considerably less than the length for elementary-school classrooms as recommended in one of the latest statements of advanced elementary-school planning.[3] In this article it was suggested that classrooms 36 to 40 ft. long were desirable for classes numbering 35 to 40 pupils.

However, it is interesting to note that 33 1/3 per cent of the classrooms in 1939 were more than 32 ft. 6 in. long as compared to 9 8/10 per cent in 1932 for similar lengths. The earlier study showed that 83 per cent of the classrooms had lengths falling between 29 ft. 6 in. and 32 ft. 6 in., while the more recent buildings had only 66 per cent of the lengths of the classrooms falling within those limits.

The conclusions may be drawn that there is a tendency toward less standardization in the length of classrooms. The slight change in median lengths is not significant enough to indicate any general trend toward longer classrooms, desirable as it may be.

Classroom widths showed a slight decrease over the seven-year period. Whereas the median width in 1932 was 23 ft. 3 in., in 1939 it was 22 ft. 7 in. This tendency is counter to recommendations by authorities in the field. The change, however, is not statistically significant.

Fifteen of the 22 buildings contained classrooms 12 ft. in height. In two buildings two doors were provided for each classroom. One of these buildings had a third door leading directly to the outside for every classroom.

Coat storage was provided by four different methods. The most popular was the small wardrobe, generally about 2 ft. 6 in. by 12 ft. in size, recessed in or built against the rear wall of the classroom. Eleven buildings were so equipped. Corner wardrobes, somewhat similar to the above facilities were found in five buildings. These occupy the inner rear corner of the classroom. One such corner was equipped with lockers. Large coatrooms were indicated in only three buildings. Corridor lockers, recessed

[1]Graduate Fellow in the Advanced School of Education, Teachers College, Columbia University.

[2]Oberholtzer, K. E., Pitkin, R. S., and Strayer, G. D. Jr., *Housing the Modern Elementary School in Twenty Cities*, mimeographed, 1932.

Leggett, Stanton, *Housing the Modern Elementary School in Twenty-One Communities*, mimeographed, 1939. Copies of both studies can be obtained from Dr. N. L. Engelhardt, Teachers College, Columbia University.

[3]Engelhardt, N. L., Jr., "Elementary Schools," *Architectural Record*, February, 1939, p. 119.

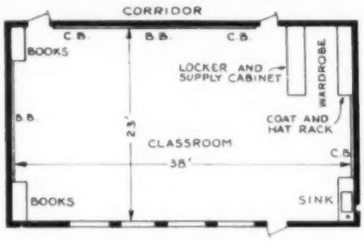
in the corridor walls are comparatively new to elementary schools. These were provided in two cases.

The influence of the activity-type curriculum is shown by the provision of sinks in a total of 38 regular classrooms included in four buildings.

Toilet facilities, following the recommendations of experts, were provided within the classroom space in 30 rooms distributed through four buildings.

Classrooms — Workrooms and Work Alcoves

In this area the 1939 buildings showed considerable advance over those planned before 1932. Where the earlier study did not even include this classification, the later analysis showed that eight of the 22 buildings constructed between 1932 and 1939 made provisions for workrooms and work alcoves in connection with the regular classrooms other than kindergartens.



An elementary classroom with a work alcove.

The use of workrooms may be one of the reasons why the classrooms failed to show any general tendency toward increased lengths. The mechanics of analysis required that workroom space be enumerated separately from classroom space. However, the use of these areas in connection with the regular instructional facilities increases the space available in the classrooms.

The workrooms offer space in which construction, simple carpentry, electrical work, art work, and other similar activities can be carried on. The separation of the workroom from the classroom space allows segregation of the noisier activities.

A total of 26 work alcoves were found in two buildings. Four schools had one general workroom each serving the classrooms. One building contained a workroom located between and serving two classrooms. Another building had a separate workroom for each classroom.

Kindergartens and Auxiliaries

Provisions for the housing of the educational activities of the younger children were uniformly high in quality. Although no elementary school in the plans studied contained space for nursery schools, 17 of the 22 buildings included kindergarten facilities distinguishable from regular classrooms.

Kindergarten rooms were much larger than regular classrooms. The median length was 40 ft. The range was from 35 to 65 ft. Widths were quite similar to classrooms although some spaces for kindergarten use were as much as 26 ft. wide.

The special attention given to the space devoted to young children is reflected in the richness of detail in the plans of the kindergarten unit. One is tempted to question the abrupt transition from a kindergarten, located in a space well designed and suitable for the young children using it, to the first-grade room, often a traditional classroom, 32 by 22 ft. in size, with little adaptation to the needs of the still young children that must use it. One of the areas of future development in design of the school plant may well be the upward extension of the degree of attention of the planners that has been so successful in making the kindergarten a charming place in which to live and work into the remainder of the primary classrooms, with, of course, suitable adjustments for the changing age and activities of the pupils.

Seven kindergartens had adjoining workrooms for the use of the pupils. One had an adjacent activity alcove. Sizes of these spaces varied from 14 by 6 ft. to 26 by 22 ft.

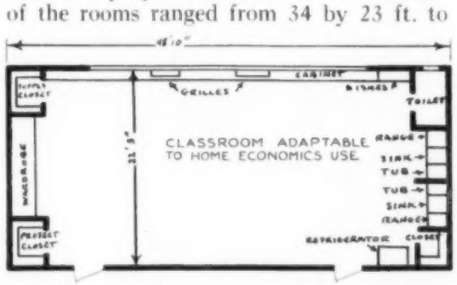
Auxiliary facilities, as indicated on the plans, were numerous. Toilets were included within the kindergarten unit in all cases. Large coatrooms were quite uniformly distributed. Storage rooms were found in a majority of cases. Bay windows, permitting segregation of activities, were included in 12 of the 17 plans. Eleven buildings provided direct outside exits for the kindergarten space. In five cases, adjoining, fenced-off playfields for the sole use of the kindergarten children were indicated on the plot plans. Sinks, drinking fountains, and fireplaces were provided in one third of the units. Animal cages, aquariums, and tile pools were also indicated. One kindergarten had a small kitchen adjoining.

Art Rooms

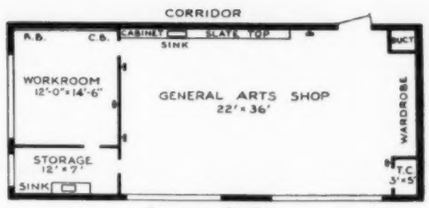
Art rooms were found in six buildings in 1939, approximately the same frequency of inclusion as in 1932. The spaces ranged in size from 30 by 23 ft. to 64 by 23 ft. 6 in. In only one building were they as small as the regular classrooms. One half the art rooms had adjacent workrooms, varying in dimensions from 16 by 9 ft. to 23 by 10 ft.

Home-Economics Rooms

Home-economics rooms were included in 38 per cent of the buildings in 1939, about the same proportion as in 1932. The sizes of the rooms ranged from 34 by 23 ft. to



A general home economics room for cooking, sewing, etc.



A general shop.

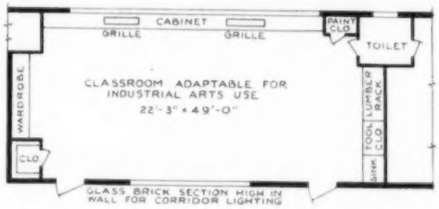
62 by 22 ft. One building had three rooms devoted to this purpose; a clothing room, a foods room, and a dining room.

A three-room apartment was found in one elementary school, indicating the trend away from the old cooking- and sewing-room provisions. In the apartment, training in home management, interior decoration, and other phases of the new home-economics program can be carried on under conditions closely approximating those of the home.

In another building, four rooms, approximately 48 by 22 ft. in size, were adaptable to home-economics use (plan included).

Industrial-Arts Rooms

Industrial-arts rooms, generally manual-training or woodworking shops, were found



This shop room will readily accommodate classes in a general shop set-up ... wood and metal work and plastics.

in only 23 per cent of the buildings in 1939 as compared with inclusion in 62 per cent in 1932. This appears to be a real decline and not attributable to sampling errors. One possible explanation of this decrease, may be the increase in the number of buildings providing simple construction equipment and space in the regular classroom area. Pressure of economy may also have required the elimination of these rooms with their relatively expensive equipment.

Library Rooms

Libraries were included in slightly more than 60 per cent of the buildings in both studies. Half of these rooms had adjoining auxiliary spaces as stack rooms, workrooms, alcoves, and conference rooms.

One excellent library section included a main reading room, 40 by 28 ft. in size, a workroom, 12 by 10 ft., and a book room, 12 ft. 6 in. by 6 ft. Another contained a fireplace at one end, and provision for easy access by the community for joint use of the library space by the school and adults.

Music Rooms

Music rooms were included in the plans of five elementary schools in 1939. All such spaces were larger than the regular class-

(Concluded on page 114)

General Exterior View, Elementary School, Waupaca, Wisconsin.—Oppenhamer & Obel, Architects, Wausau and Green Bay, Wisconsin.

Waupaca Builds for Modern Practical Program

Lester M. Emans[1]

A genuinely modern school program requires a modern school building. An activity program particularly requires areas and arrangements not found in the conventional type of school building, and failure to provide these special areas and arrangements will as certainly defeat the purposes of an activity program as would the employment of a teacher entirely ignorant of the methods of carrying on activities.

Dr. N. L. Engelhardt[2] has remarked that "the modern school is a walk-about rather than a sitting-down one." He has pointed out that a functional school plant requires suitable aids in the form of buildings, equipment, and grounds planned specifically for the purposes which they are to fulfill, and, says Dr. Lewis W. Smith,[3] "the activities organized by a pupil, or groups of pupils, under the leadership of the teacher, requires space in which activities can be carried on such as purposing, planning, evaluating, deciding, selecting, eliminating, organizing, constructing, and creating." These, adds Dr. Smith, afford an opportunity for the children to acquire information, weigh values, make decisions, develop attitudes, and make behavior responses in connection with real situations.

All of these facts have been considered in the development of a new primary-school building erected last winter at Waupaca, Wis., and occupied by a kindergarten and grades one to four inclusive.

The school, which was completed early in the spring, is the first unit of a com-

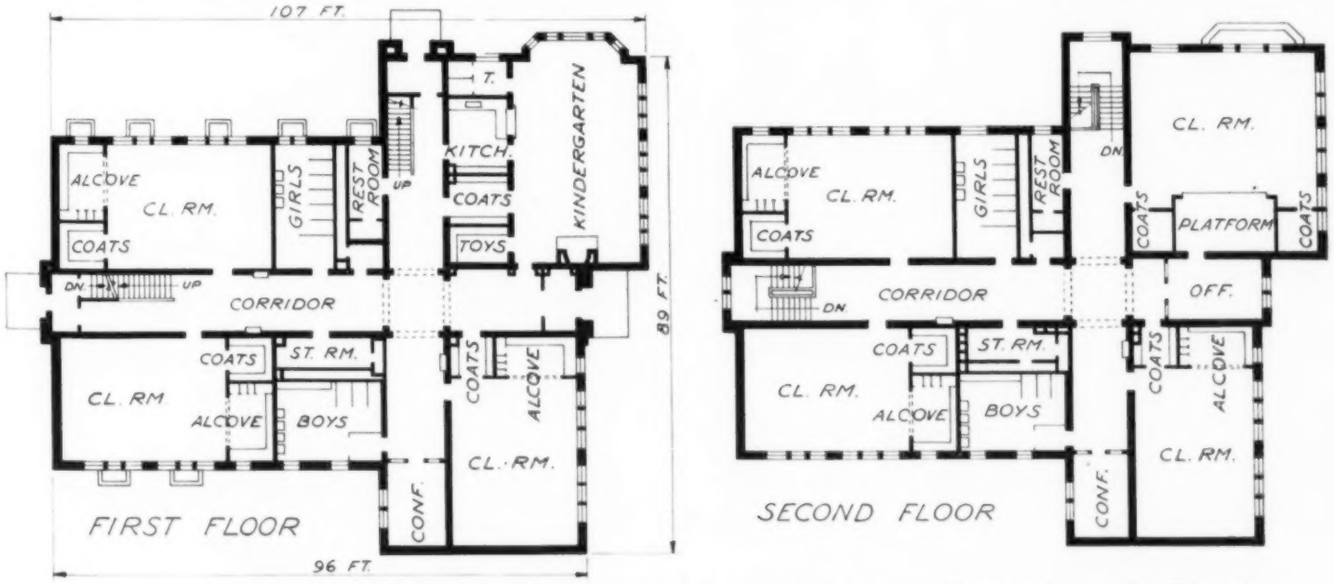
The kindergarten has an interesting floor inlaid for games and illustrated with humorous animal figures.

[1]Superintendent of Schools, Waupaca, Wis.
[2]Engelhardt, *Review of Educational Research*, Vol. V, No. 4, October, 1935.
[3]Smith, *Elementary School Journal*, Vol. XXXIII, No. 9, May, 1933.

A primary room looking toward the work alcove.

prehensive elementary-school building which will make possible a progressive modern curriculum based on the best elements of present-day philosophies of education. The building now houses only the kindergarten and the grades through the fourth. The structure is located on a large site with two other buildings. It has been purposely placed within twenty feet of a quiet street so that the broad playground area may be at the rear and away from the hazards of street traffic. It is our belief that no child can develop the freedom and spontaneity of youth hemmed in by school fences and yellow paint marks of traffic lanes.

Except for two large playrooms for use in inclement weather, and necessary pipe and plumbing tunnels, the basement is unexcavated. The first floor has provisions for a kindergarten and its accompanying auxiliary rooms; three elementary classrooms, and their activity alcoves and cloakrooms; a students' rest room, a small



Floor Plans, Elementary School, Waupaca, Wisconsin.— Oppenhamer & Obel, Architects, Wausau and Green Bay, Wisconsin.

conference room, and storage space for school supplies, a closet, and toilets. The second floor provides one oversized classroom with a stage alcove; three typical elementary rooms, each with an activity alcove and cloakroom; a small office for the elementary-school supervisor; a small conference room, storage space, toilet facilities, and closets.

A study of the sketch plans will reveal the fact that the kindergarten room has been so planned as to serve as a community room for small groups, or for faculty and board-of-education teas, and get-togethers. The kitchenette makes the serving of light refreshments a convenient possibility. The floor of this room is attractively inlaid with animal figures, set into the asphalt-tile base. An electric log in the wide fireplace will provide the warmth of friendly feeling minus the disagreeableness of smoke and soot. A narrow cork pin strip embedded in the chair rail around the room gives ample display space for the most visually minded kindergarten teacher. Built-in shelves and cupboard space in the toy-storage room enable the children and teacher to "have a place for everything and everything in its place." As in the cloakrooms throughout the building, a coat pole with hangers provides not only a suitable place for cloaks but also makes possible that the children have experience with the use of coat hangers. A wide shelf suitable for mittens, caps, and dinner pails is provided above the coat pole.

In all classrooms, paneled ceilings of acoustically treated wood fiber tend to lessen noise and the consequent nerve strain on teachers and pupils. Considerable time and effort were spent in selecting the material for the ceilings as both noise absorption and light reflection were deemed most important.

A close-up view of one of the alcoves. At the left and rear are spaces for materials, the teacher's vertical file, books, etc. The shelf at the right is fitted with running water and an electrical utility outlet.

In the kindergarten and in the corridors, the drinking fountains are placed at suitable levels for the children as are also the toilet fixtures and lavatories in the washrooms.

In the kindergarten easy access for the five-year-olds is made possible through the cloakroom entrance which connects the room with a short corridor, and hence to a side door. This door is conveniently accessible to both playground and walks leading to the street.

Mr. Charles E. Krahmer[1] points out that the activity plan many times necessitates "each class divided into three groups: activity, study, recitation. These groups are flexible and may be functioning simultaneously, or as one, two, or three separate groups." Modern-day administrators and teachers readily agree that this is a fair statement. In fact, many times there are almost as many groups as there are individuals within the room. The entire philosophy of individual differences with each child progressing at his or her own rate makes freedom of grouping "a necessary evil." Even the most ambitious and "pupil-minded teacher" will also readily admit that to provide space and opportunity for the various groups to work without distracting someone else is nigh unto impossible in the old-type 23 by 30 ft. classroom.

Waupaca has attempted a step forward in its new elementary unit by providing in each classroom a place for an activity group. It should be kept clearly in mind that "activity" might imply such an old-fashioned notion as reading. It will be noted from the drawings that each elementary classroom has an alcove at the rear. This enables the teacher (1) to conduct her recitations; (2) to supervise the study group; and (3) to keep an eye on the group working in the alcove. It also separates the "activity" group, with its more or less freedom, from the rest of the pupils. Here is an opportunity for some of the "purposing, planning, evaluating, de-

(Concluded on page 107)

The over-sized classroom on the second floor has the work alcove arranged as a stage so that it may be used for class plays as well as the ordinary activities.

[1]School Board Journal, Vol. 97, No. 2, Aug., 1938.

The Selection of an Architect

Charles E. Krahmer, A.I.A.[1]

The selection of an architect will prove to be one of the most important decisions that a school board will be required to make in connection with a school-building project. It therefore seems desirable to analyze briefly the services an architect will be required to render in order to satisfactorily perform the work entrusted to him. With such data at hand, the school board will be in a better position to judge the qualifications of the proposed architect.

In order to simplify our problem and in an effort to isolate its germ, let us page back through the pages of history, and roughly trace the development of the architect's duties.

During the early Egyptian periods, we find building construction to be a matter of tradition, the rules of which were handed down from generation to generation. These rules were strictly followed so that the governing bodies were, more than anyone else, the true architects of the structures.

We know that in ancient Greece, Phidias was the architect of all work undertaken in Athens under the rule of Pericles, and that Ictinus was the architect of the Parthenon and that these great architects supervised the work, but we do not know the nature of their duties. Classic writers were vague on these subjects.

Medieval and Modern Conceptions

When we approach the fourteenth century, a little more light is shed on the subject. At this period, we find that the architect had charge of the laying out of the structure, supervision of the work, and the creation of the character of the building. For these services he was paid a salary and enjoyed certain civic and social privileges.

The position of the architect becomes quite clear during the classical revival of the fifteenth and sixteenth centuries. At these periods in France and Italy, the architect was considered the authority on the new building laws "supposed to be derived from ancient Roman building practices." Here we find for the first time, traditional methods giving way to individual designs, with all details of the structure modeled and carved from details furnished by the architect, whose authority on these matters was unquestioned.

From these periods, to the present, the architect's duties have kept pace with the development of society, so that he is now, not only responsible for the planning, design, and execution of the work, but he also becomes a fiduciary agent whose business it is to administer the funds committed to his charge.

The steps in the development of the architect's duties were logical, and the principles involved are firmly rooted in practice and in the opinion of the English and American courts. The procedure in constructing a building, as now developed, can be boiled down to the simple proposition that the owner and the contractor agree that the contractor, for a consideration, will construct the kind and character of structure desired by the owner *as interpreted by the architect.*

Steps in the Architect's Service

The architect's interpretation of the owner's requirements makes necessary a common meeting ground of ideas. He should be thoroughly familiar with the basic activities which will take place in the proposed structure, so that the plan will allow these activities to function to their maximum efficiency and full scope. After the basic plan has been developed, the next step is the designing of an exterior which will reflect the plan and create the outward character of the structure desired. This calls for a thorough knowledge of architecture, plus a flexible and imaginative mind schooled in the practical problems involved. These functions come under the general heading of architect's sketches and constitute "the kind and character of structure desired by the owner as interpreted by the architect."

The architect's instructions to the contractor now take the form of contract drawings, specifications, and supervision, and may be defined as follows:

Drawings, specifications, and contracts for a building are the tangible and concrete expressions of the development of an idea used to produce the structure desired in accordance with the building, business, and legal practices of the community within which the building will be constructed. In the course of the development of the idea by the architect, it is interesting to note that the drawings in their various stages of development are prepared first. After the drawings are completed, the specifications are compiled. After an agreement is reached, based upon the drawings and specifications, the contracts are prepared. The contract is the written agreement to perform all of the work defined by the drawings and specifications, which when executed will legally compel one of the parties to complete all of the work shown on the drawings and covered in the specifications in return for the remuneration agreed upon.

Definition of Drawings

The drawings are prepared to illustrate those portions of the idea which it is impractical to convey by the use of the written word. Specifications are prepared to convey those portions of the idea which it is impractical to convey by the use of drawings. Usage has within reasonable limits defined the function of each. The drawings should clearly and accurately indicate:

a) The architectural and engineering design.

b) The plan, sizes, and dimensions of each portion and unit of the work.

c) Designation of each portion, so as to allow reference to it.

d) A symbolic sign illustrating the extent to which each of the building materials will be used (crosshatching, etc.).

Definition of the Specifications

Specifications are designed to convey in writing that portion of the idea which it is impractical to convey by means of the drawings. The drawings and specifications complement each other. It is for this reason that the exact function of the specifications should be defined. The specifications should describe the organization, material, and workmanship required from each and every unit, with a full understanding of the function of each, and in such a manner that in combination with the drawings, these several results will be obtained:

a) An accurately detailed presentation of what is wanted.

b) An instrument forming an accurate basis from which estimates can be obtained on each and every unit and forming a means of establishing a trade agreement.

c) A document which, in combination with an executed contract, will legally compel the production of what was agreed upon.

Factors in Use of Specifications

The following specifications should be designed keeping in mind that the 4 different individuals are very much interested in each portion:

a) *Supervisor of Construction.* It is the supervisor's duty to interpret and enforce all of the provisions of the specifications. He, therefore, should be backed with a definite, complete description of what is required, so that he will not be subject to contradiction but will be forceful enough to support his decisions. The descriptions should be clear and accurate enough to prevent the necessity of having recourse to interpretations.

b) *The estimator* desires a document accurately subdivided, with each trade inclusive, and prepared with an understanding of the market, and the trade and labor organizations in the community, to allow him to obtain accurate estimates for any and each portion of the work.

c) *The materialman* desires standard grading rules of materials and methods of construction, so that he can quote with assurance upon exactly what is wanted. The specification should be prepared so that special and unusual materials, difficult to obtain, are not required.

[1]Architect, Member of the Firm of Behee and Krahmer, Newark, N. J.

d) *The contractor.* For success in his work the contractor requires a safe, strong, and sure basis upon which to execute his various subcontracts, without fear of the necessity of paying extra for items in other portions of the specifications which should have been included under the proper trade designation.

The Architect's Professional Equipment

These complicated and conflicting duties require two basic elements in the architect's equipment: First, *integrity;* second, *ability*. Of the two, integrity is by far the more important. *Integrity plus intelligence can purchase ability. Ability cannot purchase integrity and still assume command.*

Experience teaches that this factor of integrity in an architect does not receive the consideration by the school boards that its importance warrants. It may be well to furnish some examples and illustrations to develop the point in detail.

As previously stated, the parties to the contract agree that the structure will be constructed in accordance with the architect's judgment. The courts apparently have backed up such an agreement, stating in effect: "You agreed to construct this building not in accordance with the judgment of the jury or court but in accordance with the judgment of a particular architect." They seem to agree that the architect's judgment many only be set aside due to dishonesty, lack of ability, or entangling alliances, which would disqualify him as an impartial judge.

It is interesting to trace the forms that lack of integrity takes from almost imperceptible variations of ethics right down the scale to criminal actions. Mr. Carl Egner, Newark's No. 1 citizen, and prominent attorney, stated in effect at the convention of the New Jersey Society of Architects, "I warn architects against entangling alliances; stick to your profession; do not try to become real estate operators, financial agents, or become involved with clients or builders in such a way as to destroy your professional standing."

Dangers Confronting Architect

An architect is constantly exposed to the danger of becoming under obligations to contractors, subcontractors, materialmen, politicians, and even clients to such an extent as to impair his function as an impartial judge affecting their interests. High-pressure salesmanship may involve him with the school board by promising more than he can legitimately produce. Publishing books illustrating his work, supported by paid advertisements of contractors and materialmen puts him under obligation to them. Architects become under obligation when they make shop drawings for contractors for a fee, when contractors and materialmen use influence, political and otherwise, to obtain the commission for a particular architect, when heavy discounts are obtained for building materials and services for personal use, when influence is brought to bear to secure positions for personal friends in contractor's organizations, etc.

The unethical architect can easily "pad" his drawings and specifications to require more in quality and quantity than he will require from the favored contractor, thereby assuring him of a price advantage, which lands the job. Such an architect can leave "loopholes" and include "jokers" in his plans and specifications so that he will be at liberty to interpret them, penalizing or favoring contractors almost at will.

It is a simple matter to put favored materials in price competition with superior products so that the favored material wins on price. Cash allowances and unit prices can be included and the specifications can be "rigged" so as to create or eliminate competition or control materials and subcontractors and still remain within the law. As a matter of fact, an expert specification writer schooled in public work can follow minutely the requirements of the bidding laws for public work, and with an inside understanding of bidding practices he can create exactly the opposite condition that the laws intended. An article could be written of the various methods of "rigging" specifications for the public's advantage or disadvantage, as the architect wishes.

These few examples are included to illustrate the importance integrity plays in the performance of an architect's duties and the power he may exercise for good or evil in the performance of the work entrusted to him.

Experience Spells Ability

Next in importance to integrity is ability. Ability is fathered by experience. Now, we realize and sympathize with the arguments advanced for the "local boy," who should be given a chance, new blood, new ideas, new conceptions of architecture, knowledge of local conditions, etc.

The brutal facts are that we must practice in accordance with society as organized and cannot change society to meet a predetermined plan of action. Therefore, it becomes necessary for the architect to have a background which will encompass a workable knowledge of the entire building industry in all of its branches, from labor practices up the scale to include the entire activities of materialmen, subcontractors, contractors; to be able to effectively formulate a plan of action which will co-ordinate and control their actions to produce a custom-built structure, which will meet the requirements of the laws governing public work, and assure the community that the people will obtain not only a properly designed and constructed building, but also one in which they receive exactly what they pay for.

For the architect there is only one method of obtaining such detailed knowledge and that is in the school of experience. It unfortunately requires years of experience in various phases of work to round out an architect capable of rendering fully the services necessary for the successful conception and the carrying out of this public work through its complete circle to a finished and satisfactory conclusion.

Even if the school board should have such ability and experience available through consultants, it would not be as effective as if it were centered in the architect, who will be charged with the administration of the work.

IS IT FAIR?

Thomas Wainwright, Ottawa, Illinois

An altogether too popular notion is that a gymnasium is nothing more than a place to play basketball. Another altogether too popular notion is that a model physical-education program consists of a winning football team and a student body that will turn out 100 per cent strong to watch the football team win.

Both notions are equally erroneous. Both are equally out of harmony with the purpose of *physical education* Both are equally unfair and injurious to the interests of the student body.

No one can contest the rightful popularity of "varsity" sports. None can challenge the value of basketball and football. But —

Is it not the purpose of *physical education* to endow *every* student with a healthy body? With a clean zest for physical fitness which will serve him throughout his life? With a sense of sportsmanship which can come to him only through *himself* entering into competitive physical exercise?

Every student can't be a football hero. *Every* student isn't able to be basketball "luminary." *Every* student doesn't want to be one. . . . But the entire life of *every student* can be enriched by a physical-education program which plans for *his* participation — which makes provision *for him* to take part also — in accordance with his abilities, talents, and preferences.

Any such *"democratic"* physical-education program necessitates a gymnasium — and a gymnasium with adequate facilities!

Is your gymnasium adequately equipped? Are you keeping faith with the objectives of *physical education?* Are you fair? — Or is your "physical-education" program somewhat on the "fascist" side?

RADIATOR SIZES STANDARDIZED

Under a program sponsored by the Institute of Boiler and Radiator Manufacturers, the makers of cast-iron radiators have agreed to adopt new standard sizes for radiators to be used in homes, offices, schools, etc.

Large type radiation will be produced in 17 sizes instead of 30 sizes as heretofore. Small type radiation, which heretofore have been produced in 17 sizes, will be made in 11 standard sizes.

It is expected that none but the new standard radiators will be available early in 1940.

Locker and Shower Facilities for Physical Education

I. O. Friswold[1]

The planning of school-building facilities necessarily must follow, not precede, selection of the school organization, adoption of the educational program, and analysis of the personnel, services, and activities that are to be housed in a given structure. In some areas, the promotion of health and physical education has, as yet, received scant consideration, but in recent years in many states and in numerous local school systems marked progress has been made in establishing and extending health- and physical-education programs.

The increased attention paid to these fields of instruction naturally has served to direct attention to the need for planning more effectively to provide the physical facilities required adequately to house them. Many schools have found that locker and shower provisions made in former years are woefully inadequate for the enlarged programs now offered. Lack of information on the part of architects and public school officials concerning current educational programs and trends has resulted in inadequate provisions for locker and shower facilities for physical education even in many recently constructed school buildings.

Physical-plant provisions should facilitate, not hinder, the educational program, services, and activities of the school. It is highly appropriate, therefore, to consider some of the questions and problems encountered in planning locker and shower facilities for physical education. Limitations of space require that the discussion be limited almost exclusively to bathing and dressing facilities for physical education, as such. It should be noted, however, that athletic and recreational activities sponsored by the public schools also create a demand for these facilities and that it is sound practice to consider such needs in planning locker and shower provisions for physical education, and particularly so in the smaller school systems. It should be noted also that in addition to bathing and dressing facilities as such, auxiliary physical-education facilities include provisions for, (1) instructor's offices, (2) examination rooms, (3) supply and apparatus storage space, and, in some instances, (4) laundry room and other requirements which must not be neglected in planning locker and shower facilities for physical education.

Those who may be interested in ascertaining current practices, or such requirements for locker and shower facilities as are found in the building standards of state departments of education, or the recommendations of school-building experts, specialists in physical education, architects, engineers, and manufacturers or distributors of equipment and materials commonly specified for such auxiliary facilities will, I believe, find my paper in the 1938 Proceedings of the National Council on School House Construction helpful. Here I do not propose to present current practices and standards but to advance certain suggestions in planning locker and shower facilities that will assist in working toward and eventually realizing sound practice in planning such service facilities in public school buildings.

The planning of locker and shower facilities for a given school building will be continued by such factors as class size, the nature of the health and physical program, time allotments, and the control and direction exercised by school officials relative to the use of such facilities. There are, however, certain principles or general standards that may be considered pertinent in planning locker and shower facilities in every school building. These "universal" considerations relate to (1) location, (2) space allotment, (3) illumination, (4) sanitary fixtures, (5) miscellaneous equipment, (6) type of facilities to be provided, (7) heating and ventilating, and (8) materials and methods of construction.

1. Location of Locker and Shower Facilities

It is desirable that well-planned avenues of communication be provided for pupils going to and from such facilities and (*a*) classrooms or study halls, (*b*) the gymnasium, (*c*) swimming pool, and (*d*) outside playgrounds or athletic fields. It should not be necessary for pupils to enter the gymnasium or swimming-pool room from a main corridor in order to reach the locker room; it should be possible, for example, to enter locker and shower facilities directly from the gymnasium, or outdoor playgrounds without traversing a main corridor of the school building. It is particularly important that direct access be provided between swimming-pool and shower facilities. It should be obvious, also, that locker and shower facilities should be planned so direct access may be had from one to the other type of space.

It is not important that locker and shower facilities be located on the same level with the gymnasium floor or above or below it. The most appropriate location will be determined largely by the type of gymnasium provided. The stage gymnasium appears to lend itself well to locker and shower facilities located in basement space; gymnasiums having floors at or below ground level should probably have gymnasium and locker facilities on the same level with the gymnasium floor. Where gymnasiums or swimming pools are attached to existing buildings, it is often possible and desirable to utilize space in the old building for lockers and showers.

The primary considerations in the location of locker and shower facilities are (*a*) adequate usable floor space, (*b*) accessibility, and (*c*) segregation from the public.

2. Space Provisions

The locker and/or dressing space utilized during a given class period should provide ample space not only for housing basket or fixed lockers in use but also for dressing and ready communication. Experience has demonstrated that 12 square feet of floor area per pupil in the largest class section should probably be considered a minimum. Additional space should be provided to accommodate basket or fixed lockers not in immediate use.

The floor area devoted to shower facilities will depend upon the number of shower outlets and whether gang- or individual-shower cubicles are provided. In any case, about 20 square feet of floor area should be provided per shower fixture.

It is desirable that a drying room or platform for bathers be provided large enough to allow at least 15 square feet of drying-space floor area for each 5 pupils in the peak load or largest class section.

In practice, the height of locker and shower rooms appears to vary from 6 to 14 feet. Everything considered, a ceiling height of 10 to 12 feet appears desirable.

3. Illumination

Natural illumination of locker and shower facilities has much to commend it, but also presents certain problems. Enough window area to provide 5 foot-candles of illumination under most daylight conditions is acceptable, and a larger amount of window area up to limit of classroom standards may be accepted for southern or similar areas. In northern or cold climates, however, it may be maintained that in some areas no window area whatever should be provided.

Artificial illumination, to provide at least 5 foot-candles, is here advanced as an acceptable standard. Moistureproof fixtures for shower areas should, of course, be specified. Where feasible, recessed luminaries flush with the ceiling should be used. A floor plan showing the proposed location of lockers, benches, etc., should be prepared so that ceiling outlets can be planned to provide light above service areas where it is most needed instead of directly above lockers.

[1]The writer who is director of the Division of Buildings and Business Administration, Minnesota State Department of Education, read this paper before the National Association of School Business Officials, Cincinnati, October 17, 1939.

4. Sanitary Fixtures

Shower and dressing facilities should not be placed in regular toilet rooms. Every locker and shower room, however, should be provided with a sufficient number of water closets, urinals, and washbowls as may be needed to care adequately for the needs of the number of pupils in the largest physical-education class.

For a class of 40 boys one urinal, one water closet, and one lavatory, and for a class of 40 girls one washbowl and one, or at the most two, water closets are ample.

Water closets and urinals should not be located in the shower room itself, but should be readily accessible from the line of travel between the locker and shower facilities.

5. Miscellaneous Equipment

a) Soap should be supplied in shower rooms preferably in the form of liquid soap with one manually operated dispenser to serve each individual shower or each two gang-shower fixtures. Cake soap is the most common but the least satisfactory provision that can be made. Powder is effective, but requires individual containers. Liquid soap has the advantage of being economical, and it can be piped to outlets from a central source where the supply on hand can be readily determined or replaced with a minimum of effort and delay.

b) Hair-drying equipment should be considered essential in every girls' locker room, and particularly so if a swimming pool is operated. Individual hair dryers have certain advantages, but everything considered, a series of outlets to which heated air is forced by a centrally located blower appears more desirable. Hair-drying equipment usually is not provided in boys' locker rooms, but one dryer for each 10 or 15 boys should be supplied. It appears that about 85 per cent of the girls using the swimming pool during a class period find it necessary to use hair dryers. If less than 15 minutes are allotted for shower, dressing, and hair drying, one hair dryer for every two girls appears necessary.

c) Few dressing rooms are supplied with a sufficient number of mirrors. Ample mirror space should be provided and preferably should be located on the wall in line with the exit leading to study or classroom facilities rather than above washbowls.

d) Paper towels housed in suitable dispensers should be located so as to be accessible to pupils using washbowls and obviously, a suitable waste can should be provided near the towel dispenser.

e) I recommend that a drinking fountain be provided in each locker room.

f) I do not favor a foot-bath receptacle sunk in the floor. In my opinion, suitable portable surface-type receptacles are preferable if foot baths are to be provided.

6. Type of Facilities

In the past it has been common practice to provide gang showers for boys and individual showers and dressing cubicles for girls. At present, however, there is a marked trend in the direction of gang showers for girls as well as boys. Gang showers require less floor area, involve a smaller initial outlay, require less operating cost, and can be more effectively supervised, maintained, and kept clean than the same number of individual showers. It is highly desirable, however, when gang showers are provided for girls, that they should be supplemented by one or more individual shower and dressing cubicles.

Relative to shower provisions, I wish to submit the following additional suggestions:

a) I do not believe the advantages of the lane, zone, or progressive, battery showers outweigh their advantages except where pupils or others are required to pass through a spray before entering the swimming pool.

b) I prefer side-wall fixtures with pipes accessible from a plumbing chamber or exposed in the shower room to overhead plumbing and fixtures.

c) I am willing to accept individual-shower control if a mixing valve for hot and cold water is provided for each outlet. Thermostatic control of maximum hot-water temperature is desirable. Central control by an attendant is probably preferable for children in primary grades but intermediate-grade, junior-, and senior-high-school pupils should be self-sufficient.

d) Shower heads should be of the ball-and-socket type instead of the rigid type and should be self-cleaning.

e) The mounting height of the shower heads should correspond to the shoulder height of pupils and the mounting height of the soap dispenser and the mixing valve should be respectively, about 2 ft. 4 in., and 2 ft. below that of the shower outlets.

f) Showers should be drained to the sides instead of to the center of the shower room.

g) Where feasible, shower rooms should be fully partitioned off from the locker or dressing space, but cased openings without curtains should be provided for direct communication.

h) Shower facilities should be located adjacent to interior instead of exterior walls.

Locker facilities may consist of any one of several combinations. In some small schools, a full-size fixed locker for each boy or girl enrolled in physical education offers the best solution. Where two or more sections of boys or girls are scheduled, however, it appears advisable to provide a sufficient number of fixed lockers to accommodate the largest class and to provide a basket locker for each pupil. Such basket lockers should be housed in metal racks, equipped with casters so that they can be wheeled about the locker room and to and from a basket-locker-storage room. Under this plan, only the basket lockers for a given class are accessible to pupils during a given class hour. The basket lockers of pupils not scheduled for a given class are fully protected, and special provisions can be made to ventilate the basket-locker-storage area to dry gym clothes and eliminate offensive odors.

There are, of course, many other types of locker equipment or systems which prove satisfactory for public school buildings. In every case, however, locker- and dressing-room provisions should be planned in relation to local school needs and the size and form of the space allocated for these purposes. In this connection I wish to make the following suggestions:

a) Fixed lockers should be arranged with due regard to windows to assure the most effective natural illumination that can be secured.

b) Lockers should be large enough to accommodate street clothes properly. A locker compartment 1 ft. by 1 ft. by 30 in., is desirable.

c) If double-tier lockers are installed, a sufficient number should be provided so only one of each two lockers would be used during a given class period.

d) Benches preferably should be fastened securely to the floor and provide not less than 12 linear inches of seating space for each pupil in the peak load. They should be placed not less than 1 ft. 6 in., from the lockers to insure adequate dressing space.

e) Care should be exercised to provide well-planned, adequate communication from locker or dressing space to other facilities such as basket lockers, toilets, showers, etc. Main aisles should be 4 ft. wide and where two benches serve opposite rows of lockers and run parallel to each other, a minimum clearance of 20 in. between benches should be sought.

f) Fixed lockers without legs should rest on raised platforms about 4 in. high. In any case lockers should be designed to permit ready cleaning of the floor and prevent accumulation of dust and refuse under them.

7. Heating and Ventilation

The type of locker and shower facilities provided, geographic location, and other factors affect the planning of heating and ventilating provisions. In general, however, the heating provisions shall be such as to maintain comfortable temperatures in dressing and bathing areas, and the ventilation system should reduce condensation and eliminate odors without causing appreciable drafts or excessive noise. The ideal provision appears to be one in which the dressing-room temperature is maintained primarily by direct radiation, and ventilation is accomplished by supplying warm air to the dressing space from which it is vented mechanically through the shower room by means of independent vent ducts terminating above the roof of the building and capped by approved types of roof ventilators. Where exhaust ventilation is provided, care must be exercised to control the inflow of air to the locker room. It appears practical to draw air from inside the building through ducts or registers at the ceiling line preferably opening directly

(Concluded on page 112)

Injudicious School-Building Planning

H. W. Schmidt[1]

Some time ago the writer presented an article on what he considered injudicious features of school-building planning.[2]

The reaction to this presentation was, as a whole, very satisfactory; at least the favorable comments by interested persons, administrators as well as schoolhouse planners, far outweighed the several and inevitable literary brickbats cast by those who cannot well take criticisms, even when the latter are constructive. So, it is believed, that it may be quite in order to continue the discussion in the hope that the present material will serve the designer not to continue making the more glaring errors which are given publicity here and which were found and taken off school-building plans submitted, both in the press, officially and privately.

There seems to be no good reason why, at this time, it is necessary to reiterate the writer's attitude toward this matter of improper planning which was stated rather fully previously,[3] except to mention one factor brought out in correspondence and referring to the matter of *intent* in planning. Perhaps it is a mistaken attitude of the writer, but he cannot feel very well disposed toward a design which needs a lot of explaining before the purpose of the plans is made evident. Reference is not made to the type of administration to be accommodated but rather to features which should be self-evident, and the major criticisms of the previous article refered to were of that nature. We are all vulnerable, even if we do not play bridge, and it may be imagined that the thin-skinned designer probably does not lead an enviable life, at least professionally. Even the best of intentions may go astray, yea, even in this brief article.

At this point it is also to be observed that of late there has been a definite improvement in efficient arrangement and more judicious space relations in school-building plans. It has been suggested that the work under the PWA during the past several years (and records seem to show that probably 90 per cent of school buildings have been erected under this administration) has been carefully scrutinized in the initial stages, and that therefore the more glaring errors, *if there were any*, as one designer remarked, have been corrected before construction began.

But due to the many instances when plans had to be produced almost overnight under PWA administration, in order to come under the wire, one may discount this suggestion. But many corrections in design and planning *were* made later when more time could be given to the problems.

Another comment was to the effect that designers had studied their problem more carefully and were therefore better prepared to make efficient plans, while another individual said that the *school* designer had *always been efficient* along this line. How fortunate to meet such a *rara avis!*

Whatever the cause, the writer *has* found what he considers better planning of late years, and that is all to the good of everybody. Still we still adhere to some of the old ideas which were satisfactory while we were groping more or less in the dark, but there seems little excuse for some of the work being presented even now. But let us get down to bedrock.

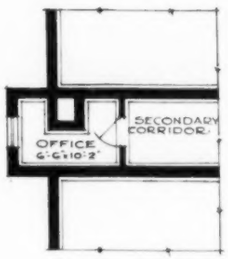


Fig. 1. A principal's office. Could any room be less useful?

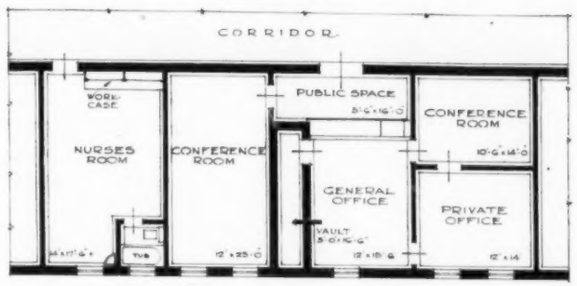


Fig. 2. An elaborate layout for a principal's office in a small school.

In the newer types of education — the activity, progressive, self-assertive, and other types — the ordinary re-citation feature is slowly but surely being replaced by other pupil reactions which are not dependent upon "so many fixed seats and 16 square feet of floor space per pupil," one of the older "standards" of school capacity and arrangement. Modern methods call for much more equipment than of old and correspondingly more floor space is required; even if the "present administration" is not yet committed to the newer attack, it is on the boards to make provisions for that which is bound to come. So classrooms may well be made larger, both for the elementary and secondary grades, and it has been found that rooms 23 by 35 ft., or even longer are none too large to meet the needs of present and future needs. Work bays and similar arrangements, tables, chairs, and other educational paraphernalia call for extended spaces. The argument that such large spaces are costly, both initially and from the operating standpoint, is admitted, but may well be outbalanced by increased educational efficiency and that, after all, is or should be our primary criterion. So we are no longer committed to classrooms 22 by 26 ft., or even 23 by 30 ft., for the lower grades or recitation rooms 22 by 25 ft., for the secondary schools. Even the small schools are recognizing this need.

Of course if the administration is fortunate enough to reduce class sizes to a lower point than now considered economical or proper, then small classroom units may be feasible. But how about the succeeding administration or growth? The educational process is not static and all signs point in the directions previously indicated.

Attention may again be called to the general lack of storage space for all kinds of materials, educational, special, or custodial. We still find cubbyholes, and that's what they are in too many cases, given over to house expensive equipment and supplies. Damp and undesirable basement areas of the "unassigned" type are still used for such storage, and to find good, clean, ventilated spaces given over to gymnasium storage or for stage equipment is a rarity. Before the writer is a note stating that the school at Ba——, a building of 500 capacity, "has one janitor's storeroom 3 ft. 6 in. by 22 ft., and one storeroom 4 ft. 6 in. by 10 ft., for educational supplies adjacent to the office." 'Nough said on this subject.

Just now "office" was mentioned, and one may be pardoned in stating that this feature of planning ranges from the sublime to the ridiculous. Take a look at Figure 1. This elementary school has a capacity of 350 pupils, with an ultimate one of 500 pupils. Then compare it with Figure 2. The latter school has a capacity of 120 elementary pupils and about 100 high-school students. One wonders who the two principals or superintendents are and who has had the most influence or who is a real administrator.

Interesting enough, spaces for libraries are beginning to assume some proportions commensurate with their importance, but we still find too many cases where little attention has been given to their size, to the relative position or accessibility of these educational features. Study halls on floors separate from libraries or the latter at opposite ends of long buildings and far remote from the former, are quite frequently found. One case may be cited where the library was located on a floor given over entirely to science work and home economics. It would seem that administrators and designers had better get into a huddle and call for more intelligible signals, to borrow terms from the athletic coaches' vocabularies.

One of the writer's pet peeves is the caption so often displayed in connection with photographs of libraries, "A Beautiful Library," or "An Attractive Library Room," when as a matter of fact in many, many cases all that is displayed is a good sized room with tables and chairs and bookcases, as devoid of decorative or pleasing appearance or features conducive to peace a..d comfort and conditions making for real study as any ordinary classrooms — and the latter *are* "cold" as a rule. It would seem so easy to make such a space attractive without undue expense; why even changing the trim and using stock moldings judiciously would be a big improvement over some interiors. It does not require 18-in. beams on the ceiling or $100 electric-lighting fixtures to make an attractive library worthy of its name. Let us have better design and better material disposition here, and we are getting some, too.

Speaking of study halls, how does Figure

[1]Supervisor, School Building Service, Wisconsin Department of Public Instruction, Madison, Wis.

[2]School Board Journal, January, 1938, pp. 29–32.

[3]*Ibid.*

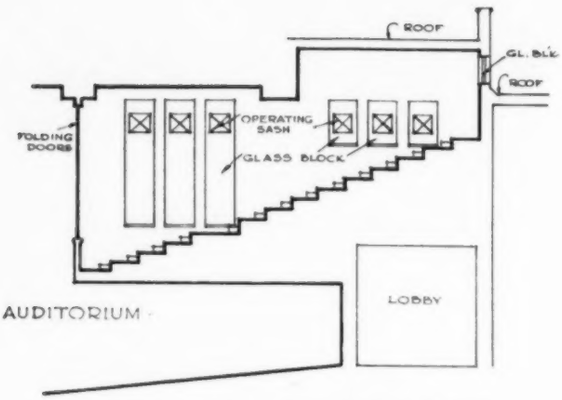


Fig. 3. Cross section of an auditorium balcony intended to be used as a study hall.

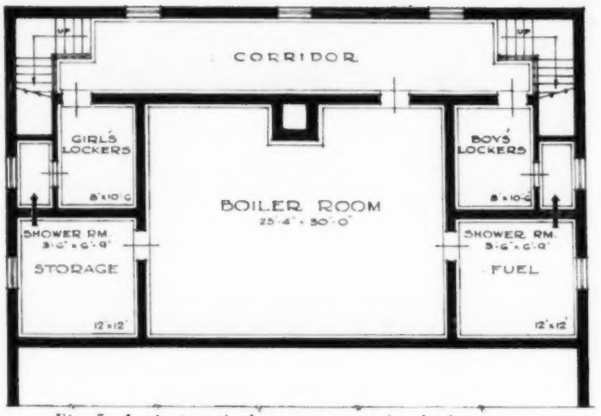


Fig. 5. An impractical arrangement for locker and shower rooms.

3 appeal to the reader? The balcony of the auditorium is planned and used for a study hall; maybe "planned" had better be omitted as there is nothing to differentiate this balcony from any other, so make your own comments. By the way, the width of the balcony is 62 ft.; the window lighting is out of step with that usually considered proper for a study hall, and the seating is what? How would *you* like to study there or supervise the students' activities?

Except in the smaller schools we have the classroom wardrobes and corridor lockers for taking care of pupils' wraps; where the cloakroom is a separate space we find frequently a definite disposition to skimp on space, making it too narrow for comfort or ease of dressing or passing. The obsolete hooks, with their incident lack of serving for proper clothing aeration, are still called for. Why not use rod and hanger shelves? Figure 4 is a good example of how not to plan for this space. A woven wire-basket overshoe rack installed above the floor, under the hooks and 16 ft. long will need to be made of "structural steel" if it is to survive the first week's onslaught of a good husky lad.

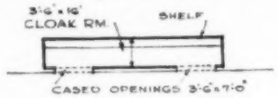


Fig. 4. A cloak room that is impossibly narrow.

Locker and shower rooms are, of course, still found located in a basement or under a stage or adjacent to a boiler or fuel room or some such subterranean area. It appears as if there are those who are under the impression that good sanitation alone would call for such spaces to be "above board" and open to fresh air and sunshine and light; but they must be mistaken to judge by the large number of such spaces not there! Size is also a neglected factor, *vide* Figures 5 and 6. A kind of Pullman sleeper arrangement with its bodily contortions must result if a group is to dress or change clothing in this space. Note also the ceiling manhole "escape" *ending in the floor of the main corridor*. Both spaces are to serve good size gymnasiums and classes; the former being 45 by 68 ft., and 50 by 75 ft., respectively. It is respectfully submitted that both are poorly planned. Yes, we know the stock argument, *cost;* but note the waste spaces in Figure 5; these too cost money. After all is said and done, these matters come home to roost on the professional doorsteps of the designer. It's not like. "The customer is always right" — don't fool yourself, the designer will be blamed every time. One wonders whether "it's better to have loved (designed) and lost, than not have designed at all."

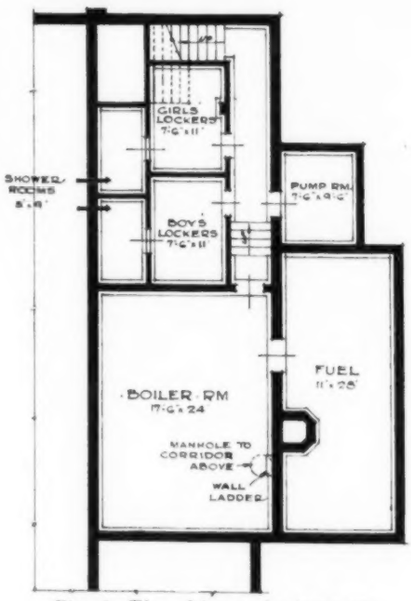


Fig. 6. The ultimate in improper arrangement of locker and shower rooms. The only access to the boiler room is by means of a manhole and ladder.

Then we find more frequently than desirable the case of favoring quarters for boys over those for girls, both as to shower and locker facilities. Maybe there are more boys than girls, but our records show no such inequality. It is hoped we are not neglecting the physical education of the girls. Is it a case of too much football or what? How about dressing-room space, and storage, 'n hair dryers?

We also have cases where only one small shower and locker room has been provided to be used by both sexes. Shades of Susan B. Anthony; dead though she be for 33 years her indomitable spirit would probably rise in wrath — if it could. Does hygiene have anything to do with this or — oh, well, what's the use.

Some paragraphs back, space relations were mentioned. One plan was observed where the "commercial department" in a small rural community occupied about 25 per cent of the total instructional space; the capacity of the school is about 125. In another instance a 500-pupil high school has four science

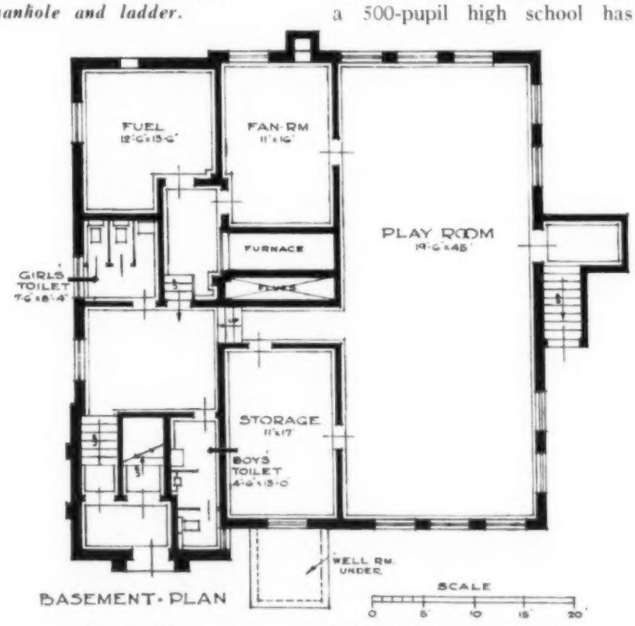


Fig. 7. The arrangement of this basement approaches perfection in the waste of space and ill-advised arrangement of rooms.

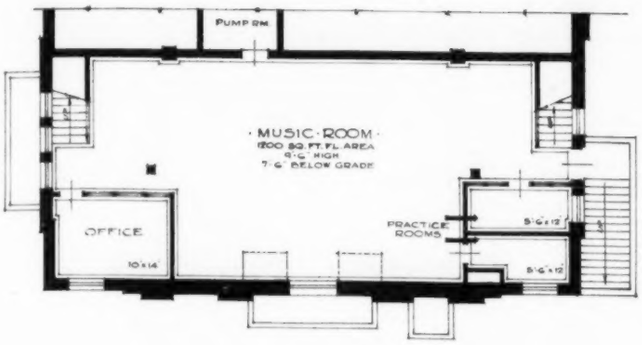


Fig. 8. Sound without light will characterize the use of this music room.

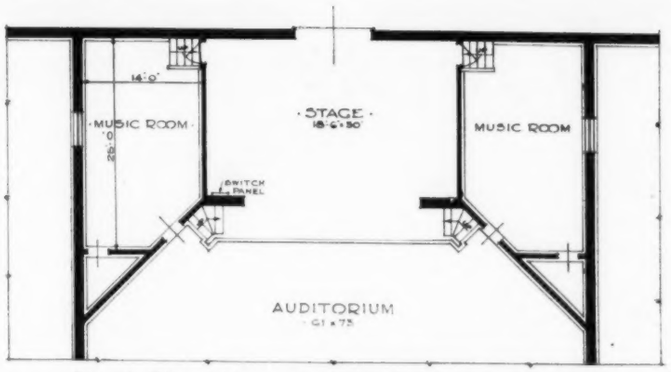


Fig. 10. The architect who designed this stage and music room arrangement had absolutely no conception of its possible use for school purposes.

laboratories and a large science lecture room in addition. The smallest laboratory was 22 by 34 ft., and the largest one 25 by 40 ft. Is someone riding a hobby horse? In opposition, a 750-capacity high school was found with two laboratories, both 23 by 30 ft. Is there something special along the line of curriculum offerings in these instances? If so, neither the names of the schools, nor their location, nor their administration warrant this. To quote the vernacular, "So what?" One may wonder if the designer docilely accepted the dictum of the board — he ought to have kicked like the proverbial steer.

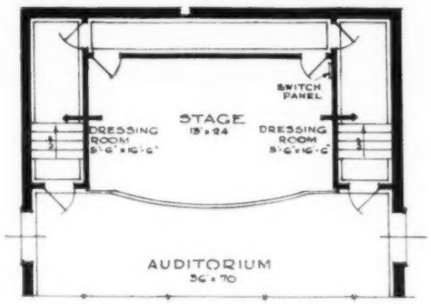


Fig. 9. A useless passageway and impossible dressing rooms characterize this platform.

Then we have the rather classic example of spreading science suites over three floors of a four-story building and spotting them coyly at various places not related to the service at all. The reason? I "dunno." Then we have the case where two home-economics rooms are wedged in between rooms designated as English rooms, and another instance where a band room was placed adjacent to a study hall. Even with acoustical treatment enough music would penetrate to "charm the savage beast," but it would not be so good for a silent contemplation of the printed page or concentrated mental effort. It is hoped high-school students are capable of both of the latter.

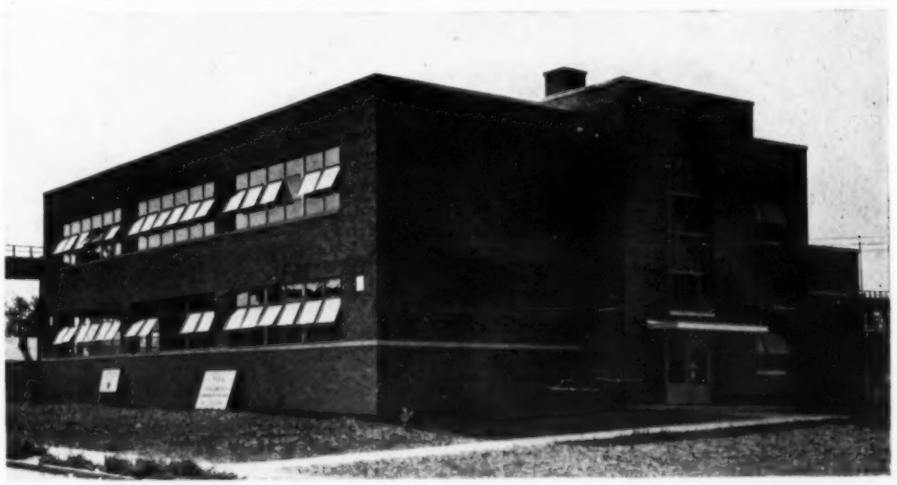
Figure 7 shows the basement plan of a two-room building. How does the reader like the space relations of that one? An increase of 25 per cent in the area of the playroom would be easily accomplished and still have the auxiliaries shown. Here in Figure 8 is another well, shall we say, interesting, plan for a music room. Note the height of the room, the window area, and the fact that it is 7 ft. 6 in. *below grade*.

But printer's space is being used up rapidly and we have time (or space) but for a few more examples of careless work. Let us take a peek at Figure 9. This is the rear or stage end of an auditorium 36 ft. 2 in. by 70 ft., and comments are really unnecessary. The "dressing" rooms have a floor space of 5 ft. 6 in. by 10 ft. 6 in.; there are no proscenium side walls and the use of the rear passageway does not appear — it leaves the stage depth 13 ft. and its width 24 ft. 6 in. The switches are at the rear and on the wrong side. But aside from these matters it's all right! Then scrutinize Figure 10. The music rooms (also dressing rooms) are unique as are also the scenery doors, big enough for a metropolitan theater. The switch-board is located in the proper and strategic position; that much is good. It may be well to study Barrows and Simonson's bulletin on "School Auditorium as a Theater" published by the U. S. Office of Education, even if you do not wholly agree with the authors. (This is not as advertised.)

But not to weary the reader this article will close with the statement that only the more unusual and peculiar plannings have been touched upon. Very likely opinions differ as to the extent of these peculiarities or even if they *are* peculiar. The writer has no ax to grind in this respect, but he could present literally dozens of arrangements which, judged by present-day standards and trends, are out of step with them.

It is also definitely appreciated that the designer is between two fires, nay several: the administrator, the school official, the city official (including the man who holds the purse strings), and various "pressure groups." And some of these fires can be mighty hot and "burns" do result. At the same time a defensible plans program can nearly always be obtained — by judicious compromises. But may the warning be sounded that such compromises *do not compromise the designer*, to make a bad pun. So these examples of planning are offered in a cooperative spirit to prevent the wrong kind of "compromise." If the designer *knows he* is right, he should stick to his point, "hell and high water" notwithstanding; but if he is wrong he should be big enough to admit it — it takes courage to admit one is mistaken but that is the measure of a man. After all such matters are of a cooperative nature, and the blame for poor planning may just as well be charged to the school board or administrator as to the designer.

May it also be observed that most of the larger schools or even the smaller ones in good size cities are, as a rule, better planned than those in the smaller communities. This, in a way, may be expected — the specialist in school-building design is more readily available in one case. On the other hand the writer has found plenty of cases where the specialist, when he gets a "small" job, is inclined to overdo the business and plan for such a complete and elaborate building that it is out of keeping with what is needed, and more important, exceeds the funds available. Good judgment should prevail even if it only concerns a $15,000 structure. So we close this article with the hope that the study of these glaring examples of injudicious planning will lead to better planned school buildings.



The Cabell School for Negroes, Charleston, West Virginia. — H. Rus Warne, Architect, Charleston, West Virginia. M. M. Konarski, Consulting Architect.

Reporting the Educational Services of PWA and WPA

A Summary of Valuable Accomplishment

Forrest Allen[1]

More than ten million young Americans — better than one third of the nation's children of school age — are pursuing their studies in safe, comfortable classrooms provided in the last six years by two units of the Federal Works Agency — the WPA and the PWA.

Where rural children once sat, two in a seat, in antiquated frame buildings, modern fireproof structures have been built that are the equal in appearance and equipment of those in urban areas. And in the cities, where until recently two-shift sessions sometimes were required, thousands of new school buildings have been erected and existing facilities completely modernized.

The magnitude of the contributions made by the government to meet the acute shortage of school facilities that existed in the United States is shown in the accomplishment reports of the Work Projects Administration and the Public Works Administration. These two agencies, operating in virtually all of the nation's counties, have constructed or improved nearly 40,000 educational buildings to serve a total (exclusive of WPA construction since July 1, 1938) of 10,728,880 students. The total cost of this work was no less than $1,457,869,066.

When the Federal Government in 1933 first undertook to assist local communities in the construction and improvement of school buildings, an appalling number of the buildings were obsolescent — about two of every five schools in the country had been built more than 30 years ago — and many of them were both unsafe and insanitary. A large number were overcrowded, and all too many failed to provide for recreation, vocational education, and other requirements of a present-day curriculum.

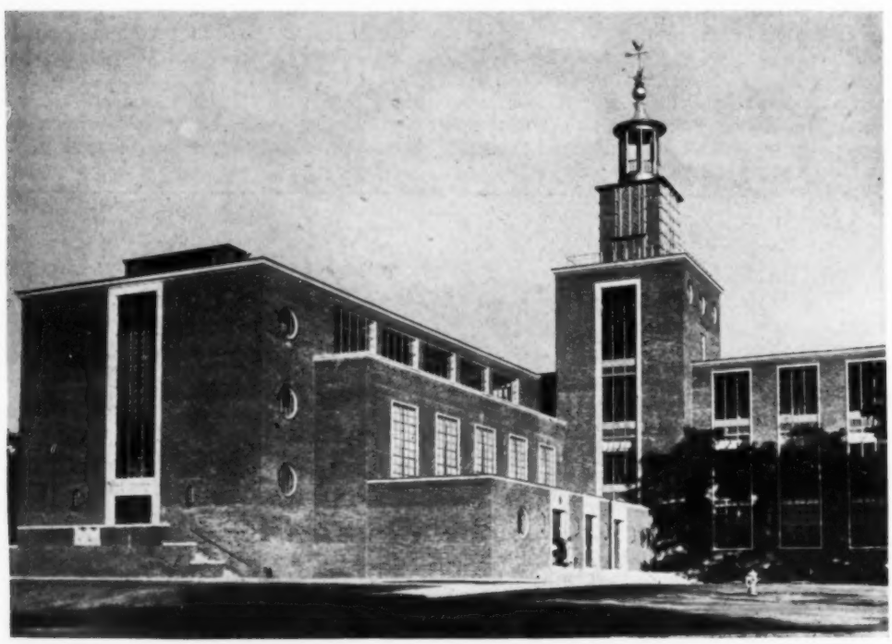
The Andrew Jackson High School in the Borough of Queens, New York City, is an outstanding example of the work which was made possible by PWA in the country's largest city.

A steady growth in school population — from 19,342,625 in 1915 to 26,367,098 in 1936 — combined with the curtailment of school construction during the first world war and later through the depression years of 1929–33, made the need for new facilities imperative. The need was recognized but the already strained finances of the average municipality or rural school district precluded action in this direction by local governments who were hard pressed even to care for their needy.

The Federal Government, through its work agencies, attacked the problem by providing most of the money needed to bring the nation's educational facilities up to date. Through the WPA the government supplied the labor required for construction and modernization, using employable workmen taken from local relief rolls, and through the Public Works Administration, the Federal Government made outright grants to local governments, as well as loans wherever requested.

During the three-year period ending June 30, 1938, the WPA erected 2,369 new educational buildings, constructed 790 additions to existing buildings, and reconstructed or improved 22,172 educational buildings. Included in these were 2,296 new school buildings with a seating capacity of 349,000 pupils, 758 classroom building additions with a seating capacity of 111,000 pupils, and 21,500 reconstructed or improved school buildings with a seating capacity of 7,889,000 pupils. Also included were 73 new library buildings,

[1]Director of Information, Federal Works Agency, Washington, D. C.



Reminiscent of modern architecture in Finland is the golden belfry of the Gamaliel Bradford High School at Wellesley, Massachusetts. The building houses as modern an organization as its architecture suggests.

A study courtyard is an effective part of the instructional units made possible in the new Santa Monica High School building, Santa Monica, California, by PWA.

32 library additions, and 622 libraries reconstructed or improved.

On projects completed during the fiscal year ended June 30, 1939,[2] the WPA completed 1,028 new school buildings with a seating capacity of 158,000 pupils, reconstructed or improved 7,821 school buildings with a seating capacity of 2,773,000, and erected 319 classroom additions seating an additional 43,000 pupils. During the same period WPA workers erected 25 library buildings and reconstructed or improved 202.

Expenditures of the WPA on educational projects through June 30, 1939, aggregated $276,333,056, of which about one fourth, or $69,872,860 was provided by the state and local agencies sponsoring the projects.

PWA's contribution to construction of educational facilities is even more impressive. Since 1933 PWA had constructed or modernized 12,690 buildings with a total of 59,522 classrooms adequate to seat 2,380,880 students. The total cost of the PWA educational building program was $1,181,536,010, of which $481,253,841 represented outright grants by the Federal Government to local governments, and another $93,106,070 federal loans to the local agencies.

These 12,690 buildings constructed or improved by the PWA included 3,058 elementary schools, 2,304 high schools, 368 consolidated schools, 793 combined elementary and high schools, 202 vocational and other training schools, 1,315 college and university buildings, 624 auditoriums and gymnasiums, 102 public libraries, and 3,913 buildings representing a combination of two or more such structures.

In general, expenditures by WPA and PWA for school construction and improvement have served four main purposes: (1) to provide new facilities to meet the needs of shifting populations and growing enrollments; (2) to replace unsafe and obsolete small buildings with modern, consolidated schools; (3) to provide new structures with modern equipment to replace obsolete and overcrowded buildings without proper heating, ventilation, lighting, or sanitation, and (4) to provide needed additions and improvements to existing buildings.

All this, of course, provided employment for thousands of workmen who otherwise would have remained on, or been driven to, the relief rolls of their respective localities. In this connection it might be mentioned that 2.6 per cent of all WPA employment has been upon educational building construction, and that at the latest compilation of WPA employment statistics 75,959 relief workers were assigned to this type of project.

An important development in all this new school construction has been the elimination, wherever possible, of the thousands of scattered one-room schools in rural areas and their replacement by central consolidated schools. A good example of school consolidation is found in Pike County, Ohio, where 7 four-room centralized schools have replaced 41 altogether outmoded one-room buildings spread willy-nilly throughout the county. Similarly, the children of Pine Mountain Valley in Georgia, who used to attend school in one-room buildings little better than shacks, now have a central 10-room modern building.

There are any number of notable instances in both the WPA and PWA records of the construction of consolidated schools to replace multiple one-room school buildings. Each has its separate story, but in almost all cases it is noted the movement toward consolidation was stimulated and furthered by federal road-construction programs — WPA, PWA, and the Public Roads Administration — to provide all-weather transportation for pupils who now travel longer distances by school buses to the larger and better schools.

The borough of Jewett City in the town of Griswold, Conn., for example, had been forced for years to send its high-school students to Norwich at an annual expense as high in some years as $50,000 until a 27-room building, accommodating 400 pupils, was built by the WPA.

Adjoining parts of Alameda and Contra Costa counties in California, neither densely populated, pooled their resources on a WPA construction project for a union high school at Livermore to meet the needs of their many high-school students who hitherto had meager facilities for instruction. A further example: Kanawha County, W. Va., has 180 rural schools, of which 122 have been thoroughly rehabilitated by WPA projects. These are typical, rather than outstanding instances of the work WPA and PWA have done in the rural areas.

Progress toward better school facilities has been equally as pronounced in the cities. In New York City, the WPA has made im-

By far the greatest number of PWA projects were in rural and village school districts where the federal aid enabled school authorities to consolidate districts and eliminate one-teacher schools. The new Grammar School at West Whittier, California, is typical of some of the achievements made possible by PWA.

[2]The corresponding figures for the two periods cannot be added to form a cumulative picture through June 30, 1939, as WPA projects active on June 30, 1938, but completed before June 30, 1939, are included in both sets of data.

provements on 49 high schools and 322 grade schools, and PWA has built or modernized 41 school buildings; in Hartford, Conn., nearly every public school has benefited by WPA improvements of some kind, while PWA constructed or improved 14. The closing, because of condemnation, of the dilapidated old Pennsylvania Avenue School in Atlantic City, N. J., in 1937, forced hundreds of children to travel across the city to reach classes in other schools until September of 1939 when the Pennsylvania Avenue building, completely reconditioned, and with the third floor removed as a safety precaution, was reopened.

Nearly all the new schools built by the WPA and PWA are attractive in appearance, with architectural styles suited to region and climate. Safety, of course, is a prime consideration in their construction, and in the rehabilitation of existing buildings. There are — or until recently have been — fires of varying degrees of seriousness in an average of five schools, every day, every year. Under both WPA and PWA, new construction and reconditioning give assurance that every building upon which a project was operated has sufficient resistance to fire so that each child would have ample time to leave a building in safety. In some sections, notably California where PWA assisted in construction of 1,323 schools, a new type of earthquake-proof school has been developed to avert disasters such as have occurred in the past, and in reconditioning of schools in those areas. WPA has removed upper stories or otherwise lessened the danger from earth shocks.

While the greater part of the PWA and WPA programs has dealt with elementary and grade schools, institutions of higher education also have benefited. In all, PWA has made allotments to 698 projects for improvement of facilities at tax-supported institutions of higher learning, assisting in the construction or improvement of 1,315 buildings at colleges and universities. These buildings, included administration and classroom facilities, laboratories, dormitories and faculty residences, hospitals, powerhouses and heating plants.

Students enjoying the sunny courtyard of the modern Northwest Junior High School, Reading, Pennsylvania. This could not have been possible without the aid of PWA.

WPA also contributed substantially to the physical improvement of publicly supported colleges and universities, its widely diversified activities including, among other work, the construction or improvement of 1,381 dormitories. Under both programs water and sewerage systems were improved, and campuses made more attractive through landscaping and construction and improvement of roads and walks. Recreational and athletic facilities are of admitted importance to elementary, high-school, and college activities. In addition to the 624 auditoriums and gymnasiums reported by the PWA, approximately three fourths of the work done by WPA in construction and improvement of auditoriums, gymnasiums, stadiums, grandstands, and athletic fields either were for educational institutions, or were for municipalities which made them available to public schools.

WPA in three years constructed a total of 5,486 new recreational buildings, including auditoriums, stadiums, grandstands, etc., improved 3,546, and built additions to 296 structures of this type. In the same period it built 1,787 new athletic fields and improved 1,504.

A notable city-wide project to provide athletic facilities for school children is Jersey City's Roosevelt Stadium, constructed at a cost of more than $3,000,000 on a 60-acre site. This stadium, built to serve the city's 70,000 students, has a maximum seating capacity of 41,000 and its construction provided employment for 2,400 men. A concrete stadium recently completed by WPA at Fort Worth, Tex., with a seating capacity of 20,000 and the finest lighting system obtainable, is used by all city schools for various athletic events, while another, seating 38,000 was built by WPA for the schools of Dallas, Tex. In big cities, and in little towns, stadiums and grandstands of varying sizes have been built in every state in the union by WPA or through allotments by PWA.

A little out of the ordinary is the $1,500,000 stadium constructed by WPA workers at Louisiana State University. This stadium not only seats 50,000 spectators, but in its construction an innovation was added by building, in the open spaces underneath the seats, four floors of dormitory rooms that house 2,500 students and rent for only $54 a year. Ohio State, too, used this idea by constructing, with WPA labor, two dormitories underneath its athletic stands.

Not only in the field of construction has education been given impetus under the Federal Works Program. The WPA education

(Concluded on page 112)

The new high school at Tupelo, Mississippi, is part of a county-wide program conducted in Lee County for modernizing and centralizing the school plants.

Development of the Kanawha County School-Building Program

M. M. Konarski[1]

The old-time magisterial and independent district board of education disappeared from the educational horizon of West Virginia by an Act of Legislature and a new County Board of Education, with county-wide jurisdiction took its place formally on July 1, 1933. The efficiencies and deficiencies of the county-unit system of administration have been thoroughly discussed in the past and needless to say will be more thoroughly discussed in the future, but the fact remains that Kanawha County, among others in the State of West Virginia, is being administered on a county-wide basis.

Again, whatever the advantages and disadvantages of the old magisterial and independent district administration may have been, shining examples of the shortcomings of this organization have been left in the wake of its demise, particularly in the type and quality of school plants and the lack of equal educational opportunities, when comparing one district with another. Each district was definitely limited in its effort to provide education for the youth by the amounts of assessments and tax levies available within that district, which produced a vicious system of unavoidable discriminations in training the boys and girls for their lifework. Poorly paid teachers, total absence or inadequacy of requisite teaching materials and equipment for a full and rich curriculum handicapped the graduates of these schools when they found themselves in competition for positions with the more fortunate fellow graduates of schools located in wealthier districts. The contrast and discrepancy between the urban and rural school is too sharp and too wide to be allowed to exist in a democracy, if that democracy is to live and survive. If "all men are created equal" is a principle of justice in a democracy, then by the same token all youth in the nation deserves to find equal common school opportunities. Many diamonds in the rough can be found in the remotest places, obscure locations, nay in the very backwoods. Each year in our land thousands of boys and girls are graduated from common and secondary schools. These have had the opportunity of obtaining an education. There are, surely, many thousands to whom, through no fault of their own, that full opportunity has been denied. The uneducated man in a democracy is a liability to himself, to the community. Properly educated youth, the citizenry of tomorrow, trained true to democratic principles form the solid rock foundation upon which the future may be built, upon which the democratic structure so built may last and survive.

[1]Consulting Architect for the Building Program.

The Horace Mann Junior High School, Charleston, West Virginia, is temporarily used as an elementary school. The building is planned for enlargement.— Meanor & Handloser, Project Architects, Charleston. M. M. Konarski, Consulting Architect.

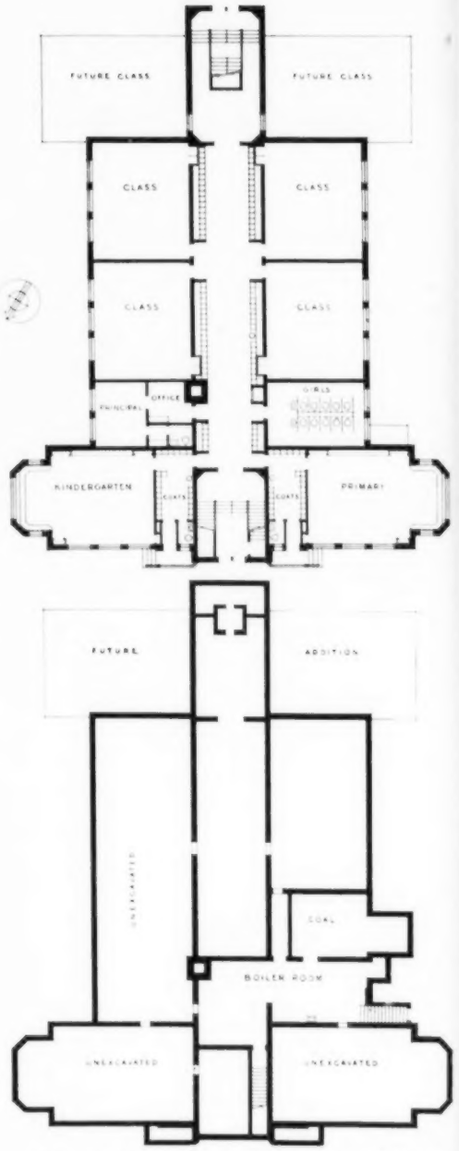
Kanawha County, composed of many old magisterial and independent districts, owned a variety of school plants from the best in the metropolitan area to the poorest in the more remote agricultural and mining districts. A county area of 914 square miles, with a total population of 160,000 inhabitants, a school population of 51,180, and a school enrollment of 44,797 (both for 1938–39), assessed property valuation of $232,539,575 (as of January, 1938) formed the background for the school-building program. The call included the erection of a number of new buildings, the extensive rearrangement of and construction of additions to others, and a number of major alterations and remodeling, a total of 49 units distributed far and wide over the county territory.

The mechanics of preparing acceptable working drawings and specifications for this program presented some difficulties. Nine architectural firms were chosen by the county board of education to perform this work. Those retained were as follows: L. T. Bengtson, Herbert S. Kyle, Walter F. Martens, Meanor and Handloser, Montgomery and Patteson, John C. Norman, Tucker and Silling, H. Russ Warne, all of Charleston, W. Va., and Frampton and Bowers of Huntington,

Floor Plans, Horace Mann School, Charleston, West Virginia.— Meanor & Handloser, Project Architects, Charleston. M. M. Konarski, Consulting Architect.

The Edison Elementary School, South Charleston, West Virginia, shares a large site with a high school building. The extensive playgrounds are at the rear.— Montgomery & Patteson, Architects, Charleston. M. M. Konarski, Consulting Architect.

A typical classroom with work alcove in the Edison Elementary School, South Charleston, West Virginia.— Montgomery & Patteson, Architects, Charleston. M. M. Konarski, Consulting Architect.

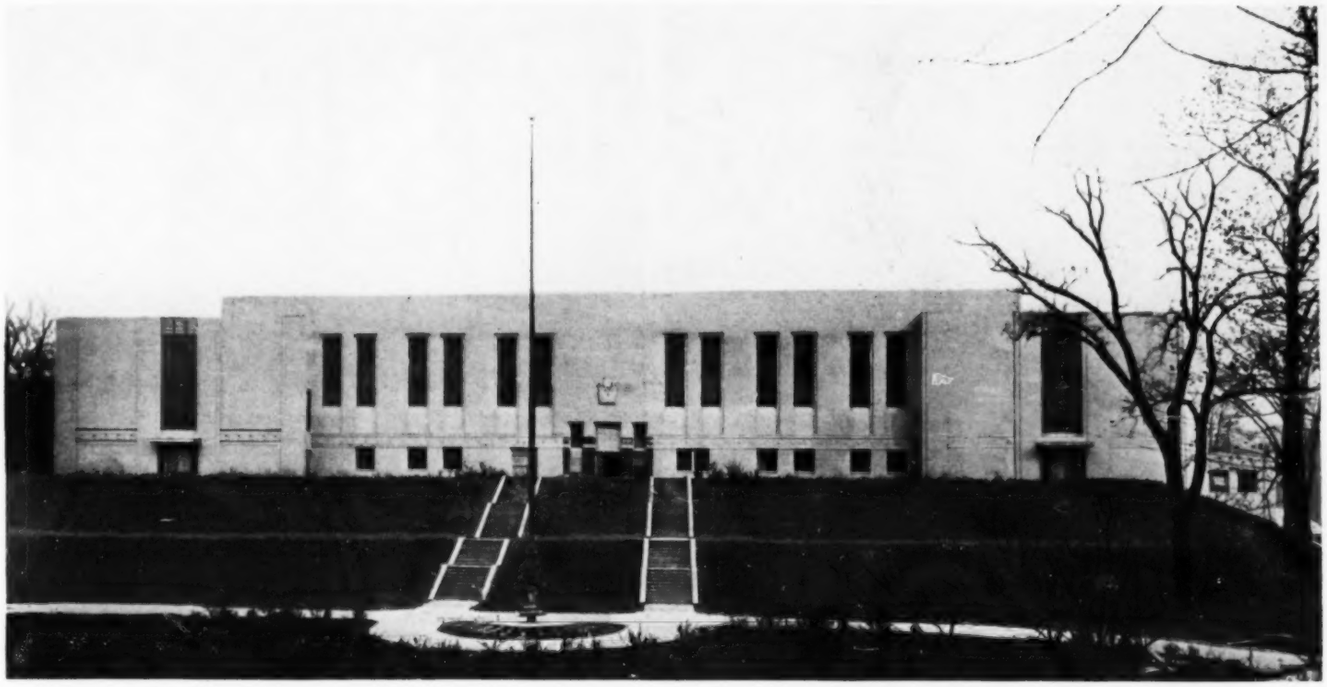


Basement and First Floor Plans, Edison Elementary School, South Charleston, West Virginia.

W. Va. The task of general planning, coordinating, and supervising of the building program rested with a consulting architect retained by the board of education for the duration of the program which was estimated to last 30 months. The project architects as well as the consulting architect were retained on a commission basis.

All preliminary planning was done by the consulting architect. The preliminary sketches, prepared in outline form, were based on functional requirements to meet the curriculum in vogue in the school system. The present organization of the school system is based on a six-three-three plan in the metropolitan area and a six-six plan in the outlying territory of the county, with the exception of the so-called "isolated" one-room eight-grade schools in the remote locations where topography, poor road facilities, and a limited population determine automatically the best plan available. With these educational requirements so determined, each project architect was furnished a set of preliminary sketches and a detail outline of the type of construction to be used, including the type and quality of materials to be incorporated in the various structures; in addition a specific outline of the kind and capacity of heating and ventilating plant based on minimum requirements for adequate heating and ventilation as dictated by the best modern practice; a detail outline of materials and equipment to be included in the installation of all plumbing work as well as materials, methods, and capacities for adequate electric wiring and type and size of lighting fixtures.

The layouts for educational equipment and the specifications were handled by the consulting architect with the advice and aid of Mr. Virgil L. Flinn, superintendent of schools, whose untiring efforts and never diminishing interest and enthusiasm in this



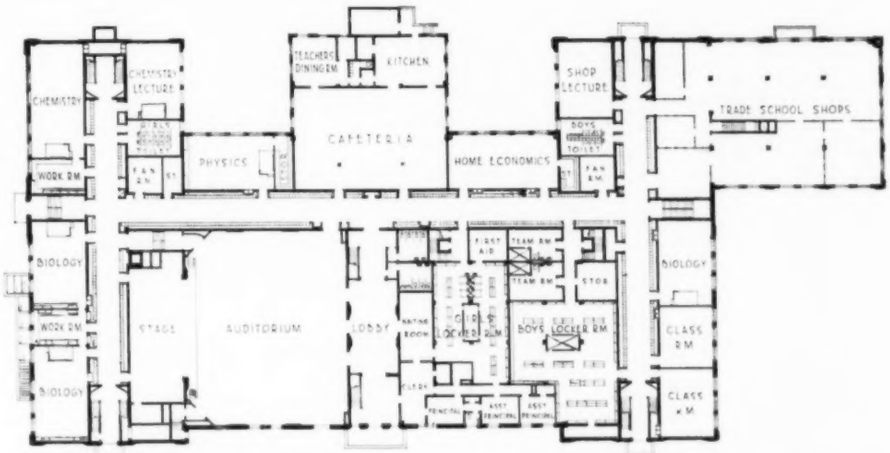
The Stonewall Jackson High School at Charleston, West Virginia.—Tucker & Silling, Project Architects, Charleston, West Virginia. M. M. Konarski, Consulting Architect.

program so materially added to whatever success may be hoped for in attaining the objectives sought by the combined efforts of all those concerned in the endeavor.

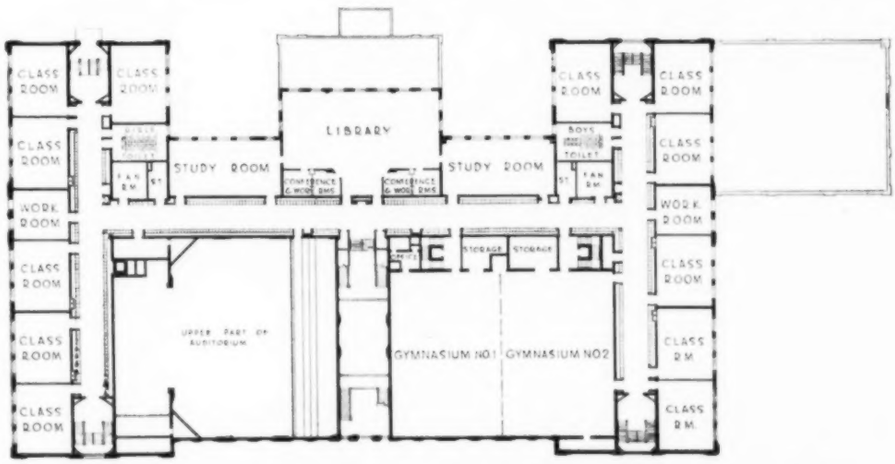
The work so co-ordinated produced a definite uniformity in all buildings, particularly in details and arrangements with full regard to future maintenance and operation problems, without necessarily producing a stereotype and painful sameness in general treatment and arrangments. There was left ample latitude to the project architect to give full play to individual taste and ability.

The bond issue of $2,200,000 voted by the citizens of Kanawha County called for a special group to administer the fund, this group to be composed of the five members of the county board of education and five representative citizens, all acting as one body on all matters pertaining to the building program. The policies laid down by this body to be followed in the execution of the program, the extensive amount of time freely given by every member, the sound and constructive judgment, advice, and counsel ever present and cheerfully given deserve the greatest commendation and admiration of every citizen in the community.

It became evident after a few sample test analyses and estimates that the amounts of funds allocated for each of the 49 units of the program were decidedly short of the amounts necessary for a proper solution of the problems on hand, educationally as well as structurally. These original allocations would barely provide the four walls and roofs, leaving little if any funds for imperative reorganization and remodeling of existing structures. The solution for this problem came in the form of federal aid through a 45 per cent grant by the Public Works Administration. With a grant amount of $1,724,423 added to the county's $2,107,627, the total $3,832,050 school-building program was launched in the fall of 1938, carried on through 1939 and is to be completed in the



Ground Floor Plan, Stonewall Jackson High School, Charleston, West Virginia.



First Floor Plan, Stonewall Jackson High School, Charleston, West Virginia.—Tucker & Silling, Project Architects, Charleston. M. M. Konarski, Consulting Architect.

Movable furniture, ample storage space for project materials, and a wide expanse of tackboard characterizes the classrooms in the Horace Mann Junior High School, Charleston, West Virginia.

Typical windows in the Oakwood Elementary School, Charleston, West Virginia.—Walter F. Martens, Project Architect, Charleston, West Virginia. M. M. Konarski, Consulting Architect.

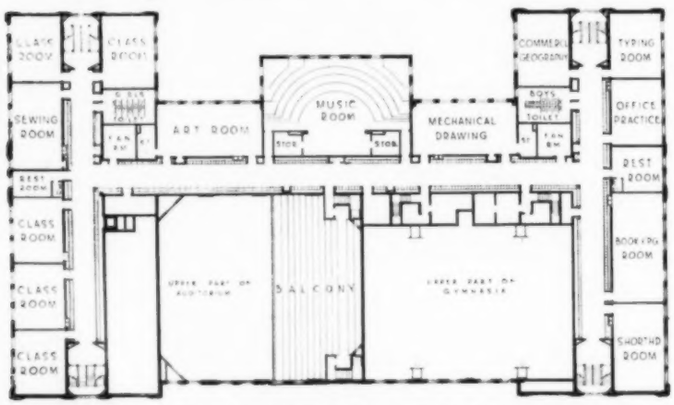
Detail of the Oakwood Elementary School, Charleston, West Virginia.—Walter F. Martens, Project Architect, Charleston. M. M. Konarski, Consulting Architect.

spring of 1940. The unit allocations of money were made for the 49 school locations on the basis of educational requirements and building improvement needs. The recent depression period and ensuing curtailed budgets over a period of years practically stopped all normal work of school replacements and improvements, creating a condition of accelerated depreciation in the buildings, greatly in need of attention and correction. The present program when completed will correct that condition in a number of the existing structures. However, many problems still remain unsolved and unfinished, which when coupled with the natural industrial growth of the Kanawha Valley and the county, will bring about the need of another building program in the near future.

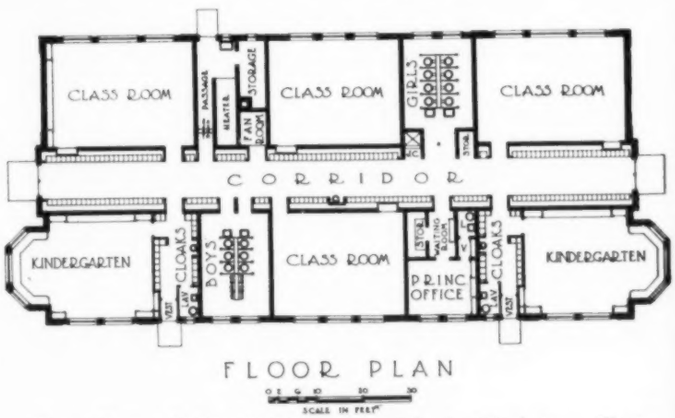
It would be futile, of course, to attempt to discuss here in detail any large number of or all of the 49 units. Perhaps, a discussion of a few typical examples would be interesting and serve the purpose as well.

The Stonewall Jackson High School and Trade School

This building was planned to amply provide for the present enrollment and for normal increases in school population in the im-



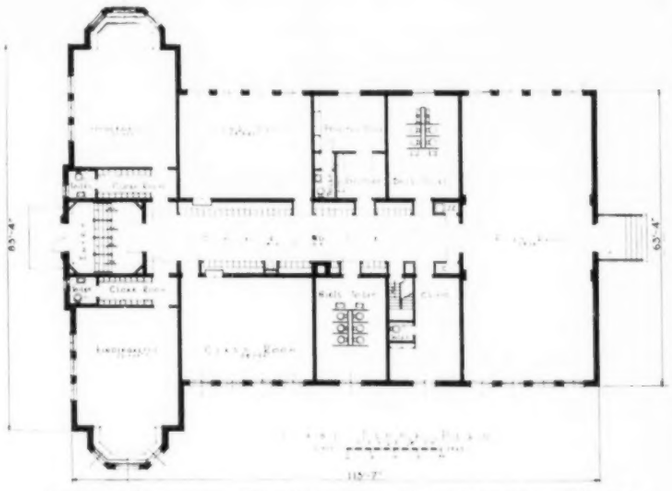
Second Floor Plan, Stonewall Jackson High School, Charleston, West Virginia.—Tucker & Silling, Project Architects, Charleston. M. M. Konarski, Consulting Architect.



First Floor, Oakwood Elementary School, Charleston, West Virginia.—Walter F. Martens, Project Architect, Charleston. M. M. Konarski, Consulting Architect.

mediate future. In planning this building particular attention was given the circulation and traffic factors which are ever present in a large high-school unit. Note especially the location of the auditorium, gymnasium, cafeteria, library, study halls, music room in relation to the rest of the plan and location. The arrangement has been studied so as to avoid long horizontal travel by students to those rooms which are most frequently visited by all of them. The gymnasium, library, study halls are located in the middle story of the three-story building to eliminate so far as possible excessive travel and criss-crossing up and down. The centraiized location of these specific rooms where large numbers congregate during each daily school period affords a quick and easy distribution of pupils at dismissal time and affords easy access from all directions at each change of classes. The corridors and stairways allow for free move-

A side entrance view of the Institute Elementary School (Negro), Institute, West Virginia.— Meanor & Handloser, Project Architects, Charleston. M. M. Konarski, Consulting Architect.



Institute Elementary School, Institute, West Virginia.— Meanor & Handloser, Project Architects, Charleston. M. M. Konarski, Consulting Architect.

A primary classroom in the Institute Elementary School (Negro), Institute, West Virginia. Note ample cabinet space and book cases.

ment of four traffic units unimpaired by the recessed classroom doors. It is possible to have undisturbed movement of two lines of traffic, passing in one direction and two lines moving in the opposite direction, without encountering a bottleneck at the usual single-way stairway. Due consideration has been given to grouping of types of activities, such as science, library and study halls, academic classrooms, commercial, trade school, shops, etc. The trade-school unit was added to the main building in order to have available for the trade-school students all the extra facilities present in a modern high-school building and to avoid an expensive duplication were the trade school located at a different site.

The architectural treatment of the building follows the modern style, the choice and use of the various materials enhancing that spirit. The latest development in methods of construction, building practices, materials, and equipment were carefully incorporated in the structure. Acoustical treatment is included for corridors, cafeteria, auditorium, gymnasium, library, and music room. The music room has capacity for a full symphony orchestra, facilities for rehearsals of dramatic productions, as well as ample space and arrangement for choral work. The room is well isolated and insulated so that the noise of rehearsals does not permeate the entire building. The library is placed between two large study halls, affording easy communication for the students who wish to make use of the library during study hours. The cafeteria located on the ground floor affords easy access for deliveries of foodstuffs and supplies and exit facilities for students to the outdoor when lunch periods are over. An exhaust system of ample capacity is installed to draw out odors from the dining room and kitchen independent of the rest of the building. The equipment here is so arranged that the room may be used for study-hall purposes when additional capacity for study is needed.

The two gymnasia divided by a folding partition may be thrown into one room for basketball games, and telescopic bleachers provide seating accommodations for spectators without permanently encumbering valuable gymnasium-floor space always needed for daily class instructions.

The auditorium and balcony, seating approximately 1,200 persons, is located and planned to be filled and emptied in the minimum of time. The stage is readily accessible from the surrounding classrooms which can more effectively and comfortably be used as dressing rooms (because of the large number of participants in dramatic productions) instead of the usual cramped and inadequate dressing rooms of the average high-school auditorium.

The locker rooms under the gymnasium arranged in nests, consisting of full size 12 by 12 by 60-in. locker and six or nine 9 by 12 by 20-in. individual lockers, have ample capacity for individual gymnasium clothing storage, proper shower rooms and isolated team rooms, so that the evening use of gymnasium will not disturb the safety of day-school properties. The administrative offices located in the very heart of the building can easily be reached by the general public as well as the students. Numerous other details may be mentioned, but can readily be recognized by careful examination of accompanying plans and illustrations.

The heating and ventilating system is the one commonly known as a split steam system. However, due consideration was given the supply of ventilating air by distributing the air from various zone centers located in terms of exposure rather than distributing air from one central location. The advantages of this arrangement are obvious to anyone confronted with a school ventilating problem.

Toilet facilities and drinking fountains are available for both girls and boys on every floor of the building.

Artificial illumination is provided in every room based upon the recommendations of IES for correct foot-candle delivery on the working plane of every type of schoolroom.

The new elementary schools were planned

(Concluded on page 108)

THE AMERICAN
School Board Journal
Edited by Wm. Geo. Bruce and Wm. C. Bruce

Better Schoolhouses in 1939 and 1940

A SINGLE year develops comparatively few and minor changes in the planning and construction of so widely standardized a type of building as the schoolhouse has become in America. The highly conventionalized forms of organization of schools, the uniformity in the character and quality of teaching, the fixed character of professional and official services of planning and constructing buildings, and the commonly found helplessness of novices and outsiders, all prevent quite effectively radical innovations in plan and fresh experiments in design and use of materials. Our school administrators in cities and states are settling down to a rather middle-age conservatism from which only progressively minded educators and youthfully energetic architects are disturbing our superintendents and school boards.

In California alone are schoolmen and educators combining forces for really novel and new forms of classrooms, new ideas in natural lighting and ventilation, and an indigenous type of design. In the Middle West, there is some rebellion against the conservative design of the past two decades, but in the states on the Atlantic seaboard there are signs of positive reaction in the character and quality of the instructional facilities and in the general architectural design of buildings.

The discontinuance of PWA aid has led many school boards to forget that they have paid at least 55 per cent of federally aided projects. They have been discouraged without reason in tackling their school-building needs and providing necessary new structures and enlargements to the limit of the funds locally available. Most of the difficulties are purely psychological and, unless a new spirit of local initiative and self-help is developed within the next year, we shall again see a shortage of adequate school space. School buildings have never become obsolete at so rapid a rate as they are at the present time, and the stoppage of new construction will produce embarrassments as serious as those of the early Twenties.

During the year just passed, the insistence on modern design in school buildings has been so widespread that the use of the historic styles has been almost eliminated, except for the perennial interest in the Colonial and greatly simplified Georgian precedents. While the modernistic designers have stood less strongly for new and novel forms, they seem to have gathered power in making cement, stone, and metals express the democratic concept of public education and the active uses of the buildings. There is still need for more mature thought so that the factory-like plainness of the work done between 1930 and 1937 will realize the promise of the pioneering of Sullivan and the other good modernists. The modernistic work of Dwight H. Perkins, in Chicago, between 1905 and 1910, had satisfying qualities of form and color which should be universally improved upon now that the functional idea in design is so much better understood and new ways of handling new materials have been mastered.

The planning of school buildings has gained little in the past two years. There is wide need for research in planning. The development and balance of the more important areas of buildings, their adaptability to the variety of new activities in adult vocational education, are not so well understood in schoolwork as are corresponding problems in hospital and apartment-house work. Splendid individual studies have been made of construction costs, but group activity is desirable in this special field. It is to be hoped that in 1940 some private or public funds will become available for unbiased studies of planning and of such important and increasingly expensive services as lighting, air conditioning, plumbing, and communication.

Some recent buildings show an abysmal lack of appreciation of the right use of new materials. Some of the new floors will not stand up under school wear; the placing of glass blocks is frequently poor; some of the acoustical materials are hard to maintain and will lose their absorption qualities in painting; some lighting fixtures will lose efficiency rapidly because they are troublesome to clean. More exchanges of experience are necessary in the several associations of school executives before these situations can be widely checked and corrected.

In many buildings, particularly in small towns and rural areas, there are signs of the need for more intensive preliminary program planning. The services of the school-building divisions of the state departments of education have never been utilized as they should be in the making of community surveys and in laying out long-range programs to be undertaken piecemeal. The possibilities of this type of study has been demonstrated repeatedly by the work done in three or four states where the state departments have realized their opportunity.

A further type of preliminary service can be realized only in states where the county or regional form of school control prevails. This consists of the permanent employment of an experienced architect, on a fee or salary basis, to work on continuous programs and to act as consultant with local architects in the planning and construction of new buildings and in the repair and remodeling of old structures.

The present arrangement of architectural service, which causes a man to lose all interest in a building the day it is accepted from the contractors, might well be changed to give the architect some period of responsibility — five or ten years — during which the school board could call for help and advice in maintenance and repairs. The man who would foresee ten years of possible criticism of ill-chosen materials, poor construction, or bad planning would exercise a wholesome type of care to guard himself against failures.

While the permanent school architects are rarely guilty of the poor work suggested in the foregoing sentences, recent events in various cities indicate that these employed officials are subjected to other dangers against which school boards must guard. Higher costs, more complicated mechanical equipment, and extreme slowness in accepting new types of materials, new kinds of heating, ventilating, and electrical apparatus seem to be besetting sins of these architects and engineers. The ultimate economy and the greater educational service which are sought by school-planning executives are not always demonstrable. The official architect must definitely hold himself

and his work on a basis which will show readiness and ability to compete with outside architects.

There is no question that the federal intervention in schoolhouse construction has been valuable from the standpoint of economic and work relief and has provided numerous buildings which would not have been built otherwise. The physical and economic quality of most of these structures is excellent. And the experience of the past two or three years shows that PWA-aided buildings, while somewhat higher in first cost, are safer against fire and panic dangers, but markedly cheaper in maintenance and operation than the run of school structures of the previous decade. Where school boards had planned in advance there have been examples of genuinely fine plans but, in the smaller communities, the haste imposed by the several PWA programs, and the need of employing inexperienced local architects, have settled upon the small school districts rigidly old-fashioned classrooms, wasteful gymnasiums, and auditoriums that are wholly unsuited to school dramatics.

If federal aid is to be revived, it is to be hoped that the influence of the immediate PWA authorities, who have shown a fine spirit of cooperation, will be directed toward a better solution of the problems of adaptability of plans and equipment to the school organization and the instructional program.

It seems necessary to add that boards of education, through their state and national organizations, have a duty to study the problems of school planning and construction and, in some substantial way, build up higher standards. Activity may be unwisely halted for a few months, but schoolhouse construction for some years will be a major problem that must be solved before the new and expanding programs of instruction can be efficiently carried on. Continuous study of local situations, increased use of skilled and experienced men in making surveys and carrying on planning are needed.

Impetus Given to Music Appreciation by School Authorities

THE contribution made by the schools to music as a cultural influence in American life has not been measured with any degree of understanding. The vast growth of popular appreciation of music can, however, be conjectured when it is remembered that over one million students are actively identified with school bands and school orchestras, and fifteen million boys and girls in the grades and high schools receive graded instruction in singing and listening to instrumental music.

The modern school official comes into more intimate contact with the subject when the proposal to provide band instruments and uniforms for the school band is before him. He has for years agreed that the singing lessons given in the classrooms have their cultural value but has also gradually been awakened to the thought that instrumental proficiency in music goes one step farther in extending the cause of music appreciation. In fact, it is a step toward recruiting the music bands and orchestras with desirable talent. At the same time, the charm of music is given a wide diffusion in the community.

The late John Philip Sousa, the great creator of martial music, once told that out of a hundred musicians, fully one half are home grown without having taken lessons, a considerable fraction have received training on some musical instrument, and only a minor number have studied composition and the higher realms of the art of music.

Sousa might well have added that of the number who have received any training in instrumental music at the hands of competent instructors, many have come out of the ranks of school bands and school orchestra players. Some of these, unquestionably have had private instructions under trained music masters. But, the incentive to play a musical instrument, nevertheless, had its origin in the modern school orchestra.

And here it may be added that the manufacturers of musical instruments have not only found the school field a promising market for their product but have been prompted to improve that product considerably in point of efficiency and quality.

Be it finally said, that the school orchestra as exemplified throughout the country at this time, is making a distinctive and valuable contribution to the cultural life of the nation. The school authorities called upon to encourage the musical tendencies of their students may well bear this fact in mind.

Local Residence for Teachers?

THERE are few school-administrative bodies in the larger and medium-size cities that have not at some time considered the residence of their teachers. The question arises over the instructors who teach in one town and live in an adjoining town or rural area.

The argument usually advanced is to the effect that the teacher should live where she is employed, and that she should become a member of the community in an economic, civic, and social sense. It is expected that she patronize the local merchants, assume indirectly at least her share of the local burdens of taxation, and manifest an interest in social activities.

The board-of-education member who seeks to compel the teachers to reside in the city or village that gives them employment has a sympathetic audience for his demand. Aside from the economic considerations involved, there is some force in the argument that a teacher, in order to train pupils for useful citizenship, should know the community, and should understand intimately its racial and social characteristics, its industrial and commercial situation, and its educational and cultural life.

On the other hand, the teachers under criticism claim that they discharge their full professional and legal duties when they do an efficient job of classroom teaching. The question of residence cannot enter here. In fact, all participation in social and civic activities is purely voluntary and is the private concern of the teachers as individuals and citizens. Restrictions on residence are an interference with personal rights and expressions of narrow provincialism.

When one considers the interdependence of city, town, and village in this country it seems rather illogical to build miniature trade or cultural walls around every town. After all, no city or town is self-sufficient or able to exist without the neighboring towns and the surrounding country. The small town, especially, is no longer a true, complete community without the large territory that embraces the natural trading area and the geographic territory in which there is easy travel and communication. The interchange of trade and commerce implies reciprocal benefits. To discriminate against outside towns simply invites retaliation. The school authorities ought to be the last to engage in rules and regulations that invade individual rights and prerogatives.

Survey of Building Needs at Des Moines[1]

Calvin Grieder, Ph.D.[2]

During seven months ending July 1, 1939, the writer was engaged on a full-time basis as director of a survey of school-buildings needs at Des Moines, Iowa. The last preceding survey of similar nature had been made in 1922 by J. W. Studebaker, then superintendent of schools. Conditions had changed so much by 1938 that the board of education, upon the joint recommendation of Superintendent A. W. Merrill and the city planning commission, resolved to institute a new study before making plans for any large-scale operations in building construction, rehabilitation, or site purchase. Dr. E. T. Peterson of the College of Education at the State University of Iowa acted as consultant throughout the course of the survey.

A comprehensive study[3] was made of city and school population and population trends, sites and buildings, future building and site needs, and financial considerations. Only a few findings which seem to be of general interest are here summarized. The city of Des Moines presents many of the same types of plant problems that face other communities. Administrators may, therefore, find it both profitable and interesting to take an over-all look at the plant situation in one city, even though this abbreviated report is inadequate to do any more than merely illustrate a few aspects of the total study.

Four phases of the investigation are treated in this paper: status of sites and buildings, site and building needs, the financial program, and the relationship of city plan and school survey staffs.

I. Status of Sites and Buildings

A. Elementary-School Sites

1. *Number and Location of Sites.* The existing school plant must form the point of departure in planning the future plant. Hence it is essential to know enough about the extent, condition, and suitability of the existing plant to make an intelligent approach to the problem of providing for coming years.

In Des Moines the regular elementary-school pupils, numbering 14,707 in 1939, are housed at 48 centers, ranging in type from K-1 to K-8. As a convenience to two neighborhoods, two junior high schools care for 50 to 60 pupils each in grades K-2. These two centers are not included in the following discussion, so that the total number of centers usually referred to is 46.

The area of the school district is large, including not only the 55 square miles of the city, but also about 7 square miles outside the city limits. The population of about 150,000 has spread over a large part of the area, a fact which increases the difficulty of providing not only adequate school service but every other kind of municipal service.

The pattern of the populated portion of the school district is roughly paralleled by the distribution of the schools. Of the city population only 9 per cent lives beyond one-half mile from an elementary school, although 52 per cent of the total city area lies in this territory. In those parts of the school district which lie outside the city limits it is estimated that about half the people, or between 3,500 and 4,000, live more than one-half mile from a school. About one fourth the area of the total served portion is within one-half mile of *two, three,* or *four* schools.

The schools situated beyond the central part of the city are well spaced, with only a small degree of duplication of service, and very few areas which need service are without it. The fact that these centers represented fairly recent spotting of new construction (since about 1915) probably accounts for their superior placement.

On the other hand there can be little question that the irregular, illogical, and uneconomical arrangement of the older centers is due to the fact that many of them were inherited from a score of small independent districts when consolidation took place in 1907. While some inherited buildings have long since been abandoned, there yet remains to be effected a general reorganization on a metropolitan scale.

Location and Size of Sites

2. *Location Relative to Major Street Plan.* An extremely unfortunate condition obtains in that 36 schools are located on or within one block of an existing or proposed arterial thoroughfare. Only 2 schools lie as far as 3 blocks from an arterial street. Traffic flow counts at most of the school locations were made in December and January under the supervision of the city traffic engineer. At 5 locations an average of more than 500 cars passed per hour, while at 13 others the averages ranged from 206 to 420 cars per hour. To take an "average per hour" does not convey the full meaning, however, as certain hours are "peak" hours, while during other times traffic decreases greatly. The busiest periods were found to be from 7:30 to 9:00 a.m. and 3:30 to 6:30 p.m., within which fall the hours of going to and from school. It is not known how much daily fluctuation occurs at each point, but the count of cars on some days was double the count on other days at some locations. It is probably no exaggeration to add that counts made in spring and fall would show a very large increase over a midwinter traffic count.

In view of the tremendous investments in both existing schools and major streets, and in view of the pattern of growth and long-time development of the city, it appears impossible to remedy entirely these unfavorable conditions. Practically the only communities which can solve the traffic problem are those which are built *de novo.* The retention of many schools in the ultimate plant badly located from the point of view of traffic hazards is inescapable. Some opportunity for betterment may appear from time to time, as shown by the City Plan Commission's willingness to discard plans for a major street development when the survey staff pointed out its undesirability.

3. *Size of Sites.* There are no rigid standards for the size of elementary-school sites. In the past decade or two, 5 acres has come to be a commonly accepted minimum, but some schools probably require more and some less, depending on enrollment, type of building, form and contour of site, type of program, environment, and other factors. It is generally agreed, however, that no elementary school should possess less than 3 acres and preferably about 5. Large schools with enrollment of 1,000 or more pupils (not yet within the experience of Des Moines) should have more ground.

From official plats of the school property the area of each site was calculated. The following classifications shows that 26 (57 per cent) of the schools have less than the minimum of three acres:

Total Site in Acres	*No. of Schools*	*Per Cent*
Less than 3	26	57
3 to 3.99	6	13
4 to 4.99	11	24
5 or more	3	6

Excluding parts of school grounds separated from the building sites by streets, the figures are as follows:

Building Sites in Acres	*No. of Schools*	*Per Cent*
Less than 3	29	63
3 to 3.99	6	13
4 to 4.99	10	22
5 or more	1	2

The most recently built schools have, in general, fairly adequate sites. Practically all of these have three acres or more of usable ground. That size cannot be held as the only criterion is well illustrated in the case of one school where the site comprises 4.83 acres of which only 1.58 acres is usable on account of the exceedingly rough terrain.

Play Spaces

4. *Amount and Character of Available Play Space.* In measuring the space actually available for use as playfields, care was taken to exclude the areas reserved for drives, parking, lawns, and ornamental

(Continued on page 72)

[1]This is the first of two articles. In this issue Dr. Grieder reports the status of the school plant; in April the proposals for a long-time program of improvement will be summarized.

[2]Assistant Professor of Education, the University of Buffalo, Buffalo, N. Y.; formerly on staff College of Education, State University of Iowa.

[3]Grieder, C., and Peterson, E. T., *A Survey of Building Needs* (Des Moines, Iowa: Board of Education, 1939).

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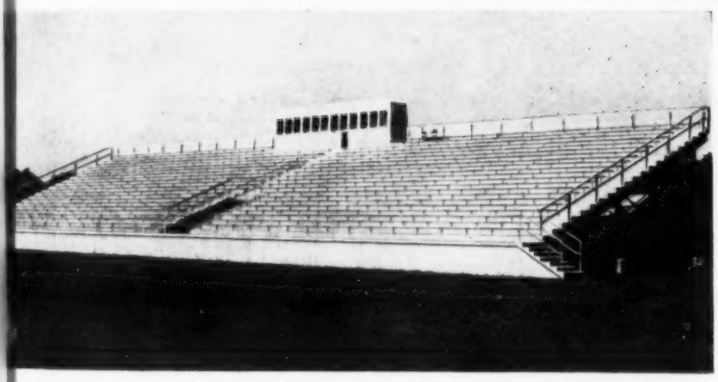

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(Continued from page 70)

planting, as well as the area occupied by the building. Steep terraces on some playgrounds where extensive grading had been done were also excluded. The rule followed was to measure that portion of the site actually allowed to the pupils for play.

Now there is no scientifically determined standard for the size of school playgrounds in terms of number of square feet per child. Conditions vary from school to school, and from city to city. Staggered recesses can be resorted to where otherwise playgrounds would be crowded. But there are times when all the children are outdoors, such as the hours before school, so that maximum use must be allowed for.

It can be unequivocally stated that less than 250 square feet per pupil results in congestion. This approximates the standards set up by the Committee on Curriculum Research of the College Physical Education Association, and those of the National Recreation Association. The play space should be available in large, flat areas — not made up of many small patches. Multiple-use playing fields for such activities as relays, volley ball and basketball type games, kittenball, stunts, and individual athletic events should be laid out. It is desirable to provide sufficient facilities so that boys and girls in grades 4 to 6 may be separated for certain activities.

According to the standards referred to above, 28 schools would be judged as having inadequate play area, 9 fairly adequate, and 9 satisfactory.

Available Play Space Per Pupil (Sq. Ft.)	*No. of Schools*	*Per Cent*
Less than 250	28	60
250 to 500	9	20
Over 500	9	20

It is unfortunate that most of the schools with large areas of play space are small in enrollment. Only 2 of the 9 schools possessing over 500 square feet per child had enrollments over 200. The most cramped sites are without exception in downtown areas where site extension will almost inevitably be very expensive. By eliminating some centers the number of sites to be enlarged can be materially reduced, as will be shown later.

The ideal surface for a playground is heavy turf, but few schools in large cities are so happily situated as to have a large enough area and a small enough enrollment to permit grass to grow. Des Moines is no exception, for at only some half-dozen points do these conditions prevail. In descending order of merit other acceptable surface materials are asphalt, oil macadam, crushed cinders rolled into a clay base and treated with a binder, and clay base with sand, crushed stone, or stone screenings rolled into the soil and treated with some kind of binder. Undesirable surfaces are brick, cement, unsurfaced clay, and plain dirt. It is probably needless to mention that good drainage should be provided no matter what the surface.

At present a number of playgrounds have a bare clay surface because of extensive grading operations. These grounds will be surfaced in due time. But most of the playfields are unsatisfactory because of their surfacing of loose cinders or sand that has not been so applied as to bind the materials and render them compact and dust free. The grading has immensely increased the usefulness of several rough or poorly drained areas. The cost was chiefly defrayed by public works agencies of the Federal Government. At some centers the work has made possible very nearly 100 per cent utilization of the site. Terraces, drives, curbs, and catch basins have been constructed.

Most of the school grounds are equipped with a few swings and a set or two of horizontal bars, and cement-side sandboxes have been constructed at some schools.

B. Elementary-School Buildings

1. *Dates of Construction.* The following tabulation shows that almost half the elementary-school buildings are of rather early vintage, at least their original portions being 40 or more years old. Parts of ten units are at least 50 years old.

Date of Original Construction	*No. of Schools*	*Per Cent*
Before 1900	21	46
1900–1919	19	42
1920–1939	6	12

Since 1931 the only major construction projects were the remodeling of two buildings in 1937. But a large amount of remodeling of individual rooms, boiler rooms, and stairways has been accomplished and is still going forward. A comprehensive painting and plastering program, including practically every structure, is also in progress. At this date almost every schoolroom has been redecorated in pleasing colors. Some rewiring has also been done. Twenty-two buildings have been enlarged by additions erected since 1920. Of the 46 buildings in use 33 have been extended by one, two, or three additions, a condition reflecting not only a growing but an exceedingly mobile population.

2. *Types of Construction.* Three major types of construction were found: fire resistive, brick wood joisted, and frame including frame with brick veneer. The era of fire-resistive construction began about 1910, and most but not all of the buildings and additions erected since then are of this character. The following tabulation sums up the data on type of construction.

Type of Construction	*No. of Original Buildings*	*Additions**	*Annexes*
Fire resistive	16	28	
Brick wood joisted	23	15	3
Frame and brick veneer	7	2	12

Evaluation of Buildings

3. *General Evaluation.* In order to provide a rough index of the relative excellence of the elementary-school buildings, they were rated on five main factors and assigned letter grades on a five-point scale. The information for evaluation was obtained from an intensive and detailed study of each building, and data otherwise available to the survey staff. A knowledge of the current status of the buildings assists in making decisions with respect to the ultimate retention or elimination of certain units. Even though in some cases poor buildings may be admirably located, while in others relatively good ones may be poorly located a systematic report on the present plant is basic to organizing an attack on future building problems.

The five main factors considered in rating the buildings are as follows:

I. Site, including location, physical features, and improvements.

II. Building, including placement, educational plan, gross structure, and internal structure.

III. Classrooms, including all construction features, and equipment.

IV. General service rooms, including auditorium, gymnasium, library lunchroom or cafeteria, kindergarten, office, teachers' rooms, nurses' rooms, janitors' quarters, and practical-arts rooms.

V. Service systems, including heating, ventilation, artificial lighting, water supply, toilets, fire protection, electric systems, and cleaning.

Each building was rated on each factor on a scale ranging from A to E. The letter values were assigned numerical values in accordance with the weights given in Holy and Arnold's monograph.[4] These weighted values were then summed up, and the total for each school changed back into a single letter grade.

On the basis of this evaluation study, the number of buildings falling in each category is as follows:

Final Rating	*No. of Schools*	*Per Cent*
B+	2	4
B	8	18
B—	2	4
C+	6	13
C	18	40
C—	0	0
D+	3	7
D	7	15

From the above tabulation it appears that there are no first-class, grade "A" elementary plants, with superior rating in all respects. However, there are 12 schools in the "B" group, and these are all fine buildings. It must be borne in mind that a structurally excellent building may have a poor site which would contribute heavily to reducing the total score. No schools are rated below "D," which indicates an absence of any extremely undesirable housing conditions.

Points of Strength and Weakness

In the following paragraphs a summary of the points of strength and weakness is given:

In general, the structures are well placed on their sites. Most of the original buildings have already been extended, and can be still further if necessary. In the most recent construction extension would be quite simple. The types of construction tabulated elsewhere indicate that a great many buildings are not fireproof. To remedy this, outside, stair-type, iron fire escapes have been installed in every school more than one story in height. In addition, concrete and steel stair wells with smokeproof doors have been built in a number of buildings, and panic bars placed on all exit doors. This very commendable program has gone on with minimum expense to the district by reason of government aid. The expense is justified in every case even though a building should shortly be abandoned, for in every case fire hazards, some of them extremely dangerous, have been eliminated.

(Continued on page 74)

*Some buildings have more than one addition. These figures include all identifiable additions at all buildings in use as elementary schools.

[4]Holy, T. C., and Arnold, W. E., *Standards for the Evaluation of School Buildings.* Bureau of Educational Research, Monograph No. 20 (Columbus, Ohio: Ohio State University Press, 1936).

Exterior of new Andrew W. Mellon Junior High School.

GAS cooking equipment,

of course

for another modern school

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This installation, small and compact as it is, has capacity enough to serve the needs of a thousand students in 90 minutes—typical of the speed, efficiency and flexibility of modern Gas equipment.

Recently installed Majestic Gas Ranges and Steam Chef vegetable cooker in Andrew W. Mellon Junior High School, Mt. Lebanon, Pa.

Superintendents, cafeteria managers, school board members—all know from experience that Gas is the preferred cooking fuel in schools everywhere. It is convenient, clean, accurately controllable, unusually flexible—and its record of dollars and cents economy is firmly established in thousands of school installations.

If you are building or remodeling, investigate the many advantages of modern Gas cooking equipment for your school cafeteria. Consult with your Gas company for information on up-to-date equipment.

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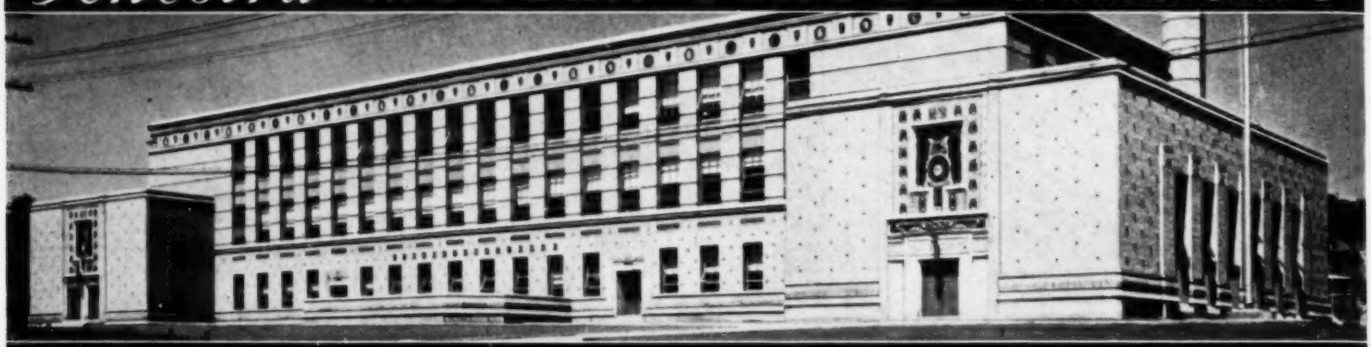

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Lemington Elementary School, Pittsburgh, Pa. Architect: Architectural Department, Board of Education. Contractor: Navarro Corporation.

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(Continued from page 72)

Few of the downtown school grounds are landscaped because space is at a high premium. All the schools situated beyond the heart of the city, however, have some planting.

Classrooms are practically all of suitable size for the type of program now in force, which may be characterized as an activity program with some attempted integration of subjects. Particularly to be noted are the many fine kindergarten rooms with excellent equipment, and the newly remodeled practical-arts rooms, most of which are the size of two ordinary rooms. The arts rooms are rapidly being equipped with a full complement of tools and supplies, about one third the schools now having been equipped. Not a large number, but too many basement rooms are still in use; few, however, are deeper than 3 ft. below grade.

During the 1920's separate gymnasiums and auditoriums were added to no less than 14 schools, gymnasiums alone to 2 more, and an auditorium to one other. Only 3 of these additions are in the central downtown area, the rest being chiefly in the intermediate, not the fringe, area. These additions provide very good gymnasium facilities, and the auditoriums seat as a rule about 250. The observed use of the gymnasiums is high but that of the auditoriums is low. Many of the schools use the auditoriums as music classrooms, an uneconomical use since the pupils usually are around 30 in number. The projection booths are rarely used today because their distance from the stage is too great for the portable machines and film now commonly available.

Lunching facilities are not of great importance except at the half-dozen schools where many pupils bring lunch. At only one school was the lunch service considered adequate. Hot-lunch service ought to be available at every school where 20 or more children eat. At several schools 100 or more pupils eat but are provided inadequate accommodations.

At several schools large accumulations of construction materials and miscellaneous discarded equipment are stored in basement rooms. The basements of the older buildings are, in general, in poor order.

As indicated earlier, a very extensive redecorating project has brought plaster repairs and new paint to virtually every schoolroom in the district. This achievement merits the highest commendation. The work has been done with the cooperation of the Federal Government and under the direction of the administrative and supervisory staff. Prior to this program few schools had been redecorated within 25 years.

Heating is in general satisfactory. The newer buildings are equipped with fan ventilation, while window ventilation is the rule in the older buildings. Unit heating and ventilating does not appear. The provision of equipment in classrooms is up to a high standard. Rapid progress is being made in changing over from fixed to movable seating. Bulletin boards have replaced many blackboards.

Artificial light in most of the buildings is inadequate with respect both to the number of fixtures and the wattage. A program of improvement now under way in a few centers will be pushed to completion as rapidly as possible. Natural light is good in most rooms, the most serious objection being bilateral windows in most of the older buildings.

Some new flooring has been laid in the older buildings but there is still a large number of rooms with old, worn, and oil-soaked floors. Drinking fountains are universally of outmoded types. Besides being insanitary they are inconvenient, for it is impossible to get a drink without wetting the hand.

It is the opinion of the survey staff that the weakness common to the greatest number of buildings is found in poor toilet facilities. While in most cases the total number of fixtures provided is sufficient, their type and distribution are with few exceptions poor. Many buildings have only one boys' and one girls' toilet room, causing congestion at certain times. Few kindergartens have toilets, and all fixtures but one in the entire system are adult size. By far the great majority of toilet rooms are without ventilation save by window and door. Rough cement floors, impossible to keep in odorless and sanitary condition, are numerous. In many cases insufficient natural and electric light is provided. Privacy within the rooms is nil in most of the boys' toilets, and seclusions from the corridors is faulty. The provision of fixtures for tissue and towels is poor. Some of the older buildings have combination drinking fountains and washbasins in the toilet rooms. At 3 schools which have outdoor toilets conditions are not desirable. One of these centers has been in use for almost 30 years.

(To be Concluded in February)

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School Law

Bond Issue for School Building

The Kansas Supreme Court has ruled that, under the state law authorizing a school district to issue bonds for one or more school buildings, the unit referred to must be the building, and not the component parts.[1]

Board May Not Issue Bonds for Repairs

Under the statute authorizing a school district to issue bonds for the erection and equipping, or purchasing and equipping schools, the proceeds of the bonds may not be used for repairs of an existing building, under a decision of the Kansas Supreme Court.[1]

Improvements Are Repairs

Where the contemplated improvement of a school building consisted solely of putting on a new roof and replacing the heating and electrical equipment, and there were no structural changes in the building, the work must be considered "repair" and not "erecting and equipping," under a decision of the Kansas Supreme Court.[1]

Principal's Election Must Be Approved

The Supreme Court of North Carolina has ruled that the state law providing that the election of a principal by local school authorities must be subject to approval by the county authorities, imposes on county authorities the exercise of discretion and judgment in the discharge of a discretionary duty imposed by the law, and that the law confers upon the county authorities the power to give or withhold their approval as their judgment may dictate having regard to the best interest of the community affected.[2]

Board May Not Rescind Contract

The Florida Supreme Court has ruled that, where a board of trustees of a special tax school district nominates a person as principal of a high school, and the board adopted the nomination, and such a person accepted, a binding contract has been created, and hence a new board of trustees had no power to nominate another person, and the (county) board of public instruction had no power to rescind or terminate its contract unless the first nominee was professionally, morally, or legally disqualified.[3]

Bus Drivers' Qualifications

The Florida Supreme Court has ruled that it is the duty of the county superintendent of schools to recommend bus drivers who are physically and morally fit, and who possess such qualifications. If the superintendent fails to do so, the county board of public instruction may reject his recommendations but they cannot be rejected on personal or other grounds.[4]

[1] *School Dist. No. 6, Chase County* v. *Robb*, 93 Pacific reporter 2d 905, 150 Kansas 402.

[2] *Harris* v. *Board of Education of Vance County*, 4 Southeastern reporter 2d 328, 216 North Carolina 147 N. C.

[3] *State ex rel. Altman* v. *Arnold*, 191 Southern reporter 71, Fla.

[4] *Arnold* v. *State ex rel. Culbreath*, 190 Southern reporter 543, Fla.

Teachers' Salaries

TEACHERS' SALARY SCALE OF EAST AURORA, ILLINOIS

The teachers in the lower division of the grade schools of East Aurora, Ill., have received increases in salary under a new schedule adopted by the board of education in 1938–39. The first-year teachers received increases of 15 per cent, the second-year teachers 10 per cent, and the third-year teachers 5 per cent. Even with the increases the beginning salary is not quite $1,000.

Under the schedule, teachers in the kindergarten, grades one and seven begin at an initial salary of $950.90, advance to a maximum of $1,447 without summer school raise, and to $1,695 with professional raises. Teachers in grades two, three, four, and five begin at $950.90 and advance to $1,281, and to $1,529 with three professional raises. Teachers in grade six begin at $950.90, and advance to $1,356, and to $1,604 with professional raises. Teachers in grade eight begin at the initial salary, and advance to $1,529, and to $1,777 with professional raises.

The increases for the kindergarten and grades one through eight will be $40.52 for the first year, $33.08 for the second year, $25.63 for the third year, and $74.42 each year thereafter until the maximum is reached.

All teachers are eligible to receive three increases of $82.69 each for college work done during the summer, and for courses taken in residence during the school year. Only one raise for professional study may be obtained in any one school year.

TEACHERS' SALARIES

♦ Members of the teaching staff of the Los Angeles, Calif., schools have been restored to their predepression salaries, under the provisions of the 1939–40 school budget.

♦ Warren, R. I. The school board has appointed a committee to study the possibility of restoring the 5 per cent salary cut to teachers.

♦ Chelsea, Mass. The 3 per cent voluntary salary contribution, made to the city by the teachers, will be continued this year. Mayor Edward J. Voke pointed out that the salary contribution is necessary at this time. The sum of the annual contribution has been reduced from 11¼ to 3 per cent during the term of the mayor.

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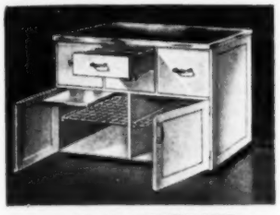

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♦ Frankfort, Ky. The school board has accepted a suggestion of Supt. C. D. Redding, that the salaries of substitute teachers be cut. Teachers substituting in the grammar schools were cut from $3.75 to $3.50, and teachers in the high schools from $4 to $3.50.

♦ Beverly, Mass. The school board has given automatic salary increases of $50 each to 37 teachers, 3 janitors, and 3 office employees. The increases were given in accordance with the "step-rate increase plan" in effect since 1937.

♦ Wauwatosa, Wis. The school board has voted to carry out the scheduled increases in salary for teachers during 1940. Under the schedule, teachers with two years of training will receive annual increases of $35; those with three years' training will be given increases of $50; and those with four years' training, or a bachelor's degree, will receive increases of $75. Teachers with four years' training who may be declared superior teachers, are eligible to receive increases up to a limit of $2,900 a year.

Teachers and Administration

♦ Boston, Mass. The school board, despite a sharp protest of Joseph Lee, a member, has decided to retain its job ban on married women teachers. The question of rescinding the ban arose when Supt. Arthur L. Gould asked permission to employ on a temporary basis Miss Laura M. Sweet, after her marriage at Christmas. Mr. Lee, in his protest, said he deplored the tendency of teachers to prefer careers to marriage. Joseph C. White said that it was impracticable to employ married teachers.

♦ The Common Pleas Court, in Cincinnati, Ohio, has ruled that while a teacher may be liable for an injury to a pupil because of failure to exercise ordinary care, he could not be charged with anticipating that a milk bottle would be used to inflict injury to a pupil. The keeping of milk bottles in the classroom was to further the general welfare of the pupils and not to furnish a weapon in making an assault upon a pupil. The suit was brought by LeRoy Guyton, a pupil, against Silas Rhodes, a teacher in the Jackson School. Guyton had been struck by another pupil.

♦ The Connecticut State Board of Education has approved a plan for strengthening the teaching forces in high schools by requiring that prospective teachers obtain eighteen credits for professional work by 1943. Under the new rules, teachers must obtain six hours' credit for professional work by 1940; by 1941, candidates for teaching certificates must obtain twelve hours' credit of professional educational courses, including six credits as a laboratory course, which is practical teaching and observation.

♦ Covington, Ky. The school board has approved recommendations of Supt. G. O. Swing, raising the standards for persons applying for teaching positions. Under the new rules, applicants will be required next year to have a minimum of four years' college training, instead of the present two-year requirement. The change, effective for the school year 1940–41, does not affect teachers now employed.

♦ North Adams, Mass. The school board has given its approval to a plan for the restoration of teachers' salaries to the level of 1932. At present the salaries paid teachers are on an average of 12 per cent below the 1932 figure.

♦ Dracut, Mass. The school board has voted salary increases for grammar- and high-school teachers. Teachers with a master's degree will be given increases of $200. Teachers who may in the future obtain a degree will be given similar increases. Teachers who obtain university extension credits in accordance with the rules will be given graduated pay increases.

♦ Kalamazoo, Mich. During the summer of 1939, 100 members of the school faculty attended sixteen different colleges and universities in various parts of the country. Fourteen of these persons obtained either a bachelor or a master degree. One hundred and ninety-six members of the staff traveled extensively throughout the United States and Canada, and one teacher traveled in Europe.

♦ Topeka, Kans. The teachers' association has voted to establish a credit union, to be open to all school employees. The membership fee will be twenty-five cents, and the minimum membership will be twenty teachers, janitors, etc.

♦ Dr. Henry R. Linville, former head of the New York Teachers' Union, in testifying before the Dies Committee recently, said that the entire American Federation of Teachers is apparently controlled by communists. In justifying his contention, Dr. Linville pointed to the stand taken by the organization on public issues. He described methods used by the communists to gain control of the organization, even while they were in the minority, and declared that they wore out the opposition by protracted sessions and the use of parliamentary obstruction. Dr. Linville also declared that he believed the American Student Union to be also dominated by communists.

♦ Elizabeth, Pa. Instructors in the schools have refused to accept gifts from students, individually or as a group. The instructors felt that the pupils should apply any money for gifts to their own homes.

♦ Minneapolis, Minn. The school board has received a report from its special committee on extracurricular activities and the payment of teachers. In a series of five recommendations, the committee has suggested that no teacher be paid more than $150 a year for extra work; that teachers receiving extra pay must carry a normal teaching load and extracurricular work must be carried on outside of regular school hours; and that arrangements for extra work shall expire at the end of the school year.

The committee suggested that extra pay be paid for out of board funds or from surpluses in individual school funds.

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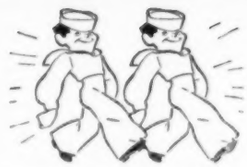
Quickly absorbs every bit of water. So *one* wipes dry.



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See Aqualized Towels for yourself . . . and see the greatest advance ever made in paper towels! The name is *Aqualized*. Manufactured solely by Brown Company, 420 Lexington Avenue, New York, N. Y.

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4. The basic cellulose materials used in these towels are White Husky Cellate and Sulphate pulps, both made from selected Northern Spruce.

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AN EXCLUSIVE WET STRENGTH PROCESS
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QUALITY

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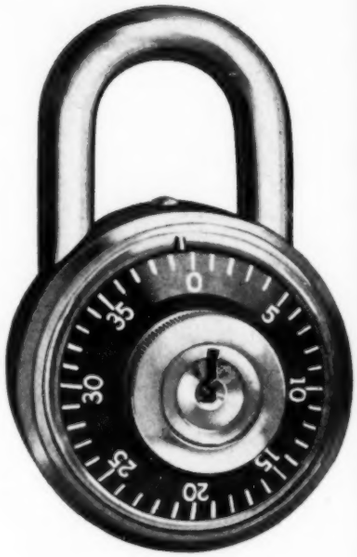
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School Finance and Taxation

♦ Cleveland, Ohio. The public school system entered the year 1940 with a deficit of approximately $1,500,000. In view of the deficit and a mandatory increase of $300,000 in teachers' salaries, the board will have a problem to prepare a balanced program for the new year. The 1940 income, based on a 100 per cent tax collection, should total about $17,400,000. It is believed that a large part of the deficit will be in teachers' salaries, which had been unpaid for the last six weeks of 1939.

♦ Greenfield, Mass. The school board has adopted a budget for 1940, calling for $303,309, which is $1,744 more than the estimate for 1938–39.

♦ The school board of Pinellas County, Fla., has issued a call for a refunding plan to wipe out an indebtedness of $4,000,000. The proposal calls for new maturity schedules for the refunding bonds, together with interest rates to be borne by the bonds, and fees to be paid refunding agents.

♦ Beloit, Wis. A school budget of $439,934 has been adopted by the school board for the next school year. This is a reduction of $5,000 from the estimate for 1938–39. The amount to be raised by taxation is $337,636.

♦ St. Louis, Mo. Mr. Philip J. Hickey, secretary of the board of education, in his annual report to the board, has declared that the public schools are suffering from dwindling revenues and increasing demands for expansion of school activities.

During the past year, Mr. Hickey pointed out that the board's revenues were $10,875,270, and its expenditures were $12,425,665, leaving a deficit of $1,550,395. The deficit was made up out of a balance which the board had accumulated over a period of years. The present balance is only $2,228,022 and is shrinking further. He called attention to the fact that the revenues received from the state are disappointing. If the city could receive a fair share of state funds, he said, the decline in local revenues might be offset.

♦ Eau Claire, Wis. The board of education has approved a budget of $435,000 for the school year 1940. The budget is identical with that of last year since a $15,000 increase is accounted for by a deficit of that amount due to a change in the heating plants at two schools. The amount to be raised by taxation is $280,000. Other revenue will be available from state aid, tuition, county taxes, and book rents.

♦ Cincinnati, Ohio. The board of education has voted to take the full $2.20 per $1,000 extra tax levy because state school officials erred in computing the city's share of the state public school fund early in the year. Mr. R. G. Fossen, finance chairman of the board, stated that the schools will be required to increase the contribution to the teachers' retirement fund by $19,000, and will lose $12,000 from estimated income from pupil tuitions next year.

♦ Sheboygan, Wis. The city council has approved a $25,000 increase for the school-fund budget, raising the total school fund to $475,000 for the year 1940. The action was taken following a previous motion disregarding the board's plea that $450,000 was inadequate for the operation of the schools. The school board had previously asked for $491,000 but the committee reduced it to $450,000. The board then complained that the amount was inadequate for the schools.

♦ Auburn, Me. The school board has adopted a budget of $222,871 for the operation of the schools in 1940. This is an increase of $13,771 over the estimate for 1938–39.

♦ Chicago, Ill. There appears to be little likelihood that the teachers of the city schools will receive a restoration of pay during the school year 1940. The school board's budget has been reduced below the $50,000,000 total of educational expenditures in 1939. James B. McCahey, president of the board, has ordered strict economy in 1940, pointing out that the board will be short $1,000,000 in gas-tax funds next year. Mr. McCahey has declared that if expenses increase, the legislature will be asked to raise the pegged levy for the year from $48,000,000 to $50,000,000.

♦ Madison, Wis. The board of education has adopted a school budget of $1,369,611 for the school year 1940. Of the total, $1,040,022 will be raised by taxation. The remaining $329,589 will come from state and county school aid and tuitions. The new budget is $63,000 more than the amount spent in 1939 but the increase was offset by $14,470 in nontax receipts.

♦ Denver, Colo. The board of education has approved a budget, calling for a levy of 16.84 mills and expenditures of $6,298,339 for the year 1940. The major source of income will be obtained from current taxes, amounting to $5,531,142, and the major item in the budget is instruction, taking 70.4 per cent of the total. The total expenditures for the next year will be $180,000 below the estimate for 1938–39.

♦ Rochester, Minn. An addition of $1,000 to the tax levy for the city schools has been approved by the city council, increasing the total to $323,946. The school board had previously asked for $332,946 and $1,000 for use in maintaining the athletic field.

NEBRASKA SCHOOL BOARDS WILL DISCUSS TAXATION

The Nebraska State School Boards Association, at its annual convention, in Grand Island, on January 9 and 10, will discuss the problem of taxation as it affects the public schools. Other topics to be taken up in the meeting are ethics of school-board members, teachers' contracts, the Smith-Hughes program. The report of the legislative program will be presented by Mr. P. J. Newman, of Manhattan, Kans.

A joint banquet with the Schoolmasters' Club will be held on January 9.

School Board News

♦ Peoria, Ill. The board of education has approved a plan, permitting the payment of janitorial pay rolls, which had been held up since the filing of a taxpayers' suit attacking the validity of a contract between the board and the janitors. The board has authorized the payment to janitors of salaries, whether for regular or overtime work, upon the same salary schedule basis recognized by the board prior to July 1 of this year, the date of the new contract.

♦ Des Moines, Iowa. The school board has received a report on a survey of the school system. The report, presented by Dr. Calvin Grieder, of the Iowa State University, recommends widespread improvements in the school plant during the next twenty years. Dr. Grieder's report approves eighteen elementary-school sites, the extension of eight, the acquisition of seven new sites, and the abandonment of 23. Under the plans proposed, six new junior high schools and one new senior high school will be erected to better serve the city. The program is to be conducted on a pay-as-you-go plan.

♦ Peoria, Ill. The school board has adopted a resolution, limiting the use of public schools as meeting places. Outside organizations, willing to pay the new fee of $3 for janitor service, will not be barred from use of school buildings or auditoriums.

♦ Tulsa, Okla. The school board has discussed ways and means of cutting school expenditures in order to meet a large deficit in school revenue. A reduction in the amount of state school aid is anticipated, the teachers' salary budget is $150,000 short, and deficits will be present in other accounts. A suggestion has been made that the school term be shortened.

♦ New Orleans, La. The Orleans Parish school board has voted against changing the rule forbidding the sale of candy, cold drinks, and milk by the parents' clubs in schools where a lunchroom is in operation. Under the present rule, such sales must be handled by the lunch department.

♦ Kansas City, Mo. As a disciplinary measure, the board of education has discontinued football at the Southwest High School for one year. The action was taken following a student rampage at a victory celebration in which the students engaged in acts of vandalism. The board voted to cooperate with the police in ascertaining and punishing those responsible for the acts, and obtaining restitution for the merchants and other persons who suffered damages.

♦ Waukesha, Wis. The school board has approved a WPA project to comprise the indexing of old school-board documents and the compiling of a list of teachers who have taught in the schools since the b girning of the school system. The information will be typewritten and kept in permanent form where it will be readily available.

♦ The school board of Pinellas County, Fla., has voted approval of the use of school buses to transport school bands to patriotic celebrations and community gatherings.

♦ The school board of Polk County, Fla., has approved calendar month pay rolls on the last regular meeting of each month. The change was made so that preparations for issuing pay checks may be completed by the end of the month.

♦ La Crosse, Wis. Mr. B. F. Franke, in a statement to the school board, urged that steps be taken in the future to prevent rowdyism and property destruction on Halloween night. He called attention to the excessive property damage on the last Halloween and urged some comprehensive entertainment program to eliminate the present evils. The board decided to make a more extended study of the situation and will appoint a committee to direct any program to be formulated.

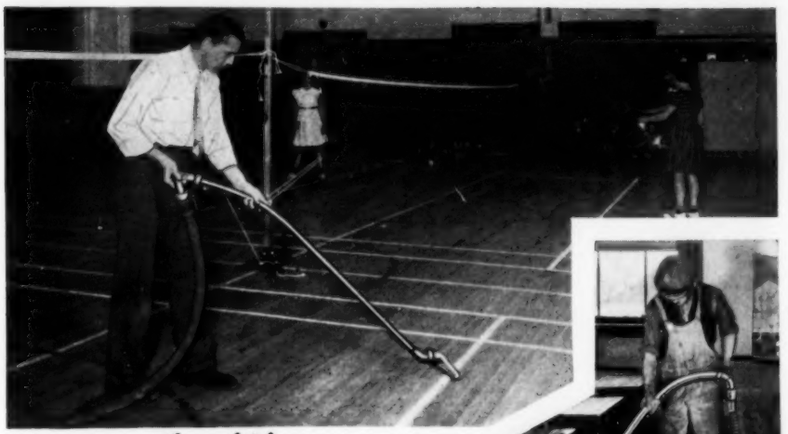
♦ Laurel, Nebr. The school board has given permission for the holding of school dances, which had been forbidden for many years. Under the regulations, there must be two faculty sponsors, lights must be out at 10:30, outsiders must be banned, and pupils may not leave the dance until over.

♦ Minneapolis, Minn. The high-school principals of the city have urged the school board to pass a rule governing extra pay for extracurricular activities conducted by teachers. The principals have submitted recommendations requiring that such teachers shall carry a normal teaching load and conduct their extra work outside of school hours. Other recommendations include a plan for expiration of extra work arrangements at the end of each school year, approval of extra pay by the superintendent, and payment of extra salary with the knowledge of the faculty concerned.

♦ Houston, Tex. The teachers' association has submitted recommendations to the school board, calling for the minimizing of the athletic program of the schools and the elimination of specialized courses. Outlining a general system of regulations and changes, the association urges that more attention be given to the fundamentals of education, including reading, writing, arithmetic, spelling, and grammar.

♦ Grand Island, Nebr. The school board has taken the initial step in the setting up of a new program of vocational education to meet more adequately the needs of a majority of the students. At the suggestion of the board, Supt. C. Ray Gates has begun a study of the field, and will submit his recommendations on the program to the board.

♦ Madison, Wis. The board of education has started court action to collect $7,800 in delinquent tuition fees. The action was taken because the county board had disallowed the claim for the tuitions.



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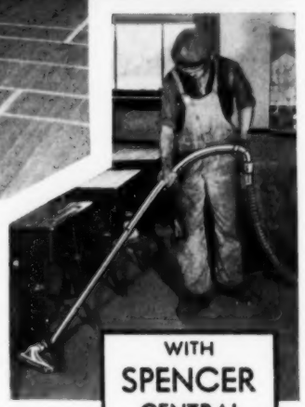

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The board has voted to take out liability insurance for its members. The insurance will give the board members protection in cases where they are legally liable for happenings in which the school district cannot be held as a governmental unit. Teachers may obtain individual protection on the same policy.

♦ Alden, N. Y. The school board and the principal of the schools have approved a proposal, calling for the release of pupils for one hour each week for the purpose of religious instruction. The pupils will meet with instructors of their religious denominations in a central church building, with each group taking a section of the building for their classes.

♦ Manitowoc, Wis. Tuition fees for elementary- and high-school nonresident students have been increased due to new laws passed by the legislature. The fee for elementary pupils has been raised from $1 to $3 per week, and that for high-school students from $2 to $2.50 per week.

♦ Rhinelander, Wis. The school board has proposed new safety measures to guard school children from the dangers of heavy traffic. It was suggested that motorists be urged to exercise caution in passing through school zones. Flashing caution signs were recommended in two danger zones. Schoolboy safety patrols, which had been operated last year, were abandoned because of possible liability for damages in case of injury of a patrol leader.

♦ Cleveland, Ohio. The board of education has adopted a resolution which insures that the schools will be kept open and all present activities continued for the remainder of the fiscal year. The board ordered that the payment of teachers' salaries be delayed and that these salaries be restored in January. It is the purpose of the board to keep within its budget and not to use any of the other funds for operating purposes during the year 1940.

♦ Des Moines, Iowa. Free hot lunches will be available to needy pupils in two grade schools in a short time. The school board has approved a plan through which the schools will participate in a state-wide free-lunch program, sponsored by the State Department of Education, the Work Projects Administration, and the Federal Surplus Commodities Corporation.

♦ Newton, Mass. "Untouchable" funds of $23,102, representing many years' profits from school cafeterias, will be put to use for the construction of new lunchrooms, if legal obstacles are overcome. Faced with the problem of providing a new cafeteria in the Day Junior High School, members of the board decided to present the money to the city treasurer and receive it back in the form of an appropriation.

♦ Springfield, Mass. Last year the school board abolished the heads of departments in the various city high schools and the increment which went with the title, so that the heads became mere teachers. Recently, the board asked the deposed department heads to take over the task of supervising curriculum changes. The changes had become necessary so that the students would not lose out under the new one-promotion-a-year schedule which went into effect this year.

The former department heads have resented the order, since many of them have been carrying on as heads of the various departments without the title or the pay, rather than let the full burden of supervision fall on the principal. They feel that the board is unfair in issuing its request calling for extra work.

♦ East Greenwich, R. I. The school board has voted to continue the student safety patrol and will reoutfit the group with new uniforms.

♦ Lewiston, Me. The school board has accepted an offer to survey the school system's fire-fighting equipment. Some of the school buildings have fire extinguishers and fire hose but very few have sprinkler systems.

♦ Greenwich Conn. The school board has voted to undertake a study of its responsibilities along recreational lines to insure that the school facilities are being used to the best advantage. A committee has been appointed to confer with the adult-education director on the use of the schools in the evening. It is the purpose to determine how far the school board can go and should go in its recreation program.

♦ Hartford, Conn. The school board has approved the use of the State Trade School five nights a week to prepare jobless to fill positions reported available in the local industries. The state board of education will assume the responsibility of financing the operation of the building.

♦ Waukon, Iowa. The school board has voted to permit dancing in the gymnasium for students of the high school and junior college. The plan is intended to provide clean fun and to discourage attendance at public dances.

♦ Grand Haven, Mich. The school board is faced with the problem of meeting the cost of educating nonresident pupils in the high school. It faces one of two possible solutions, to obtain funds to make up the difference in cost, or to close the high school to nonresidents. The latter plan would cut the enrollment and reduce the cost of operation.

♦ Elgin, Ill. The school board has refused to rescind its recent order, terminating the serving of free hot lunches to pupils of the Abbott School. In rejecting the plea of the parent-teacher association for a continuance of the lunches, the board expressed the opinion that the provision of free food to students is un-American in principle.

♦ St. Louis, Mo. The board of education has put into effect the first major changes in the school system, in accordance with the suggestions of the Strayer school survey and the audit of Boyd, Cronk & Company.

Since the beginning of the school year all personnel in the lunchrooms have received a physical examination by the hygiene department and a report is on file. A recommendation regarding further use of the lunchrooms is in effect. Also one outlining the policies and operations of the lunchrooms will be put into effect shortly. Some additional changes have been made in order to increase efficiency.

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School Building News

COMPLETES FIVE UNITS

The board of education of Coronado, Calif., has completed the construction of five new school units, comprising an addition to the grammar school, a new building for the high-school shop, an addition to the high-school academic section, a physical-education building and gymnasium. The buildings were completed at a cost of $325,454.

COST OF CONSTRUCTION UNDER PWA

Costs of construction under the Public Works Administration have shown little, if any, increase over comparable costs of private construction, according to a statement issued by the Federal Works Agency of the Public Works Administration on December 4, 1939.

The evidence, based on reliable comparisons, showed that despite maintenance of wage scales and working conditions, high quality of materials, and standards of building and design required by the PWA, over-all costs have run from equal or less to 4.8 per cent more than non-PWA construction. Even this slightly higher cost, it is pointed out, can be justified by maintenance of prevailing wages required on these projects, and by higher standards of material and workmanship.

The highest differential noted in duplicate bidding was on a school building in Gainesville, Tex., where the average PWA bids were 5.23 per cent higher than non-PWA. The low bid was 4.8 per cent higher.

In a number of projects where contracts were made on a non-PWA basis, and later were changed when PWA allotments were received, the contractors accepted the PWA specifications with no change in their charges.

Where the construction of the Stout School, a non-PWA job in Reading, Pa., cost 29.4 cents per cubic foot, the PWA contract let afterward on another school cost only 27.6 cents despite the higher labor rates.

Harold O. Fullerton, an architect of Albany, N. Y., has agreed that PWA methods promote construction cost savings through the protection against error by the double check of PWA engineers. A. S. Nibecker, of Los Angeles, Calif., declares that there has been no noticeable difference in bids between PWA and non-PWA work.

NEW SCHOOL PROJECT IN EL MONTE, CALIFORNIA

The board of trustees of the El Monte School District, in El Monte, Calif., has authorized the construction of a portion of a new plant on a site in the El Monte School District. In the new plant, the board is using the same plans with minor changes that it used in a previous project. The purpose in duplicating the previous two plants is to save in architectural and engineering costs, to erect units which will be entirely satisfactory from the standpoint of utilization, and to provide two duplicate plants in the district.

The board of trustees submitted a financing program to the people of the district last March and the tax increase was approved by a vote of two to one. The fund will yield about $20,000 per year and will furnish the money for a pay-as-you-go program for future expansion covering a ten-year period. The first money from the program will be available in February, 1940, when actual construction work will be started.

THE SCHOOL AUDITORIUM AS A THEATER

On the assumption that the demand for the use of school auditoriums for functions, other than those engaged in by the school itself is growing, has prompted the Office of Education to present a study on the subject.

This study concerns itself with the various community uses to which a school auditorium may be put and stresses particularly its value for dramatic purposes, concerts, forums, motion pictures, and radio programs. And here the report holds that too often "The acoustics are bad; or the stage too shallow for plays or concerts; or there are no dressing rooms or storage space; or the seating arrangement is such as to make the seats in one third of the house undesirable; or there is no forestage for forum speakers. All of these matters are technical details which, nevertheless, spell success or failure in the use of the auditorium for community activities. Furthermore, the auditorium is the most expensive unit in the school building, and can be justified only if it is carefully planned for the kinds of activities which are to be carried on in it."

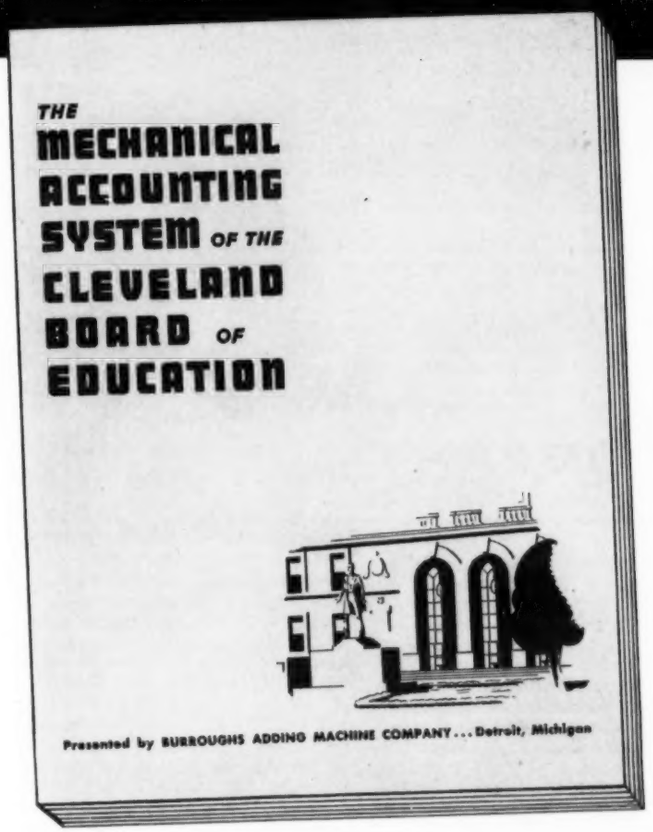
The study discusses the effects of social and economic changes on the auditorium; the complexity of modern problems seeks expression in forums which require a housing or a gathering center.

The first requirement of a good school auditorium is that it should not be too large, the bulletin of the Office of Education warns. Auditoriums should not be planned to house the whole capacity of the school. The room capacity should range from 500 or less to 750 in order to give the intimacy necessary to an effective theater where amateurs perform.

Auditoriums are usually most inadequate in the planning of the stage. The stage should not be less than 25 feet in depth, and the width of the proscenium arch 30 to 32 feet. A most frequent fault is in the tendency to provide too little or no offstage space. The acting area of any stage should never be much more than one third of its total area. Lack of such offstage space will impair permanently the usefulness of the auditorium for the many occasions for which the school and the community may wish to use it. None of the school auditoriums included in the

(Concluded on page 88)

Vital Figure-Facts At Low Cost FOR SCHOOL BOARDS IN LARGE AND SMALL COMMUNITIES



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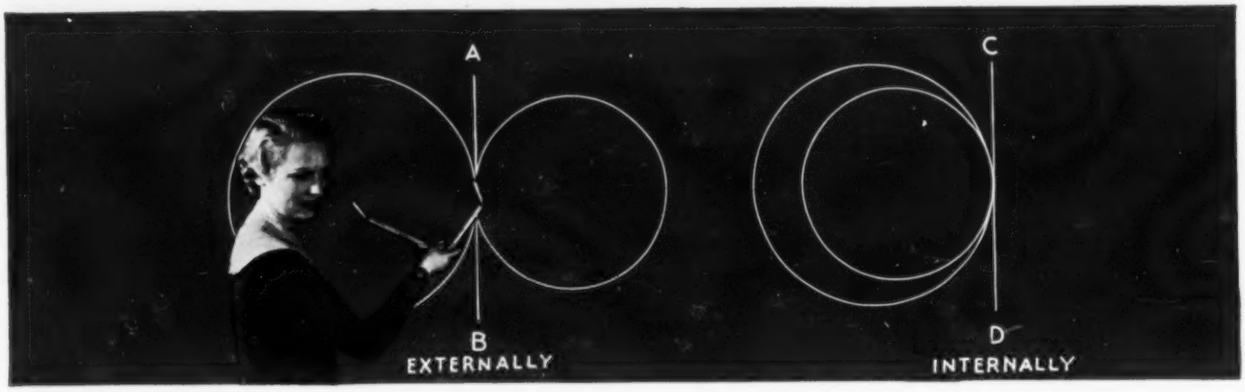

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(Concluded from page 86)

study entirely met the requirements for offstage space.

"Second, it is not necessarily true that it is less expensive to have a combined auditorium-gymnasium than a separate auditorium and a separate gymnasium. On the contrary, a recent study of school-building plans conducted by the Office of Education showed that if auditoriums are constructed to provide for 33 to 50 per cent of the capacity of the school, instead of the total enrollment, then it is possible to construct a separate auditorium and a separate gymnasium, the total cubage of which is no greater, in fact often less, than the cubage of the combined auditorium-gymnasium."

Attention is finally given to the planning of a stage which will permit the presentation of dramatic performances. The subject of lighting is fully dealt with.

BUILDING NEWS

♦ Mr. C. L. Wooldridge, superintendent of buildings for the board of education of Pittsburgh, Pa., in reviewing his proposed 1940 budget of $950,185 at a meeting of the board's committee on finance, said that the cutting of the contract budget is expensive. He presented tables showing that the building of 28 new schools since 1934 had saved the board $201,164 in repair bills. Such expense, he emphasized, is continued where building construction is proposed. He pointed out that the board would be making a mistake in retrenching in this field.

The proposed budget is $443,000 higher than the estimate of last year. A proposal to close the Franklin School, it was pointed out, would save the board $35,000 in repairs and $17,000 in employees' salaries.

♦ Batesville, Ark. The board of education has completed the erection of a junior-high-school building, which will be occupied for the first time with the opening of the second semester. Plans have been started for a new senior-high-school building, to be erected in the near future. The building will be planned to accommodate 750 students.

♦ More than 50 custodians in central schools of Delaware and surrounding county schools in Central New York gathered last summer for a three-day training school at Walton, N. Y. It was the first attempt of these men to organize a course of instruction along this line, and was followed by another meeting in Stamford, late in October.

The training course was conducted under the supervision of Dr. H. H. Linn, Superintendent of Buildings and Grounds at Teachers College, Columbia University. The men showed considerable enthusiasm in this course and they expressed the hope that it may be possible to repeat the course next summer.

♦ Long Beach, Calif. The school board has begun work on four PWA projects, involving an expenditure of $300,000 in WPA and school district funds, for the improvement of school playgrounds. The projects call for the contribution of $205,032 by the Federal Government, and $89,613 by the local school districts.

Shortages in schoolhousing facilities in the Jordan High School and the Junior College of Long Beach have been relieved with the beginning of a $190,000 building program. Bids have been received for the construction of a shop building and a girls' shower building at the Jordan High School, and a library-gymnasium addition, and cafeteria-student store at the junior college.

♦ The board of education of Modesto, Calif., has begun plans for the construction of a building to house the homemaking classes in the Modesto Junior College. The building to cost $50,000, will be ready for occupancy in September, 1940. The new unit will permit the expansion and enlargement of the curriculum and will make it possible for the Junior College to offer the most complete and best actual situation in the state.

♦ Tulsa, Okla. The school board has begun plans for the new Daniel Webster School athletic plant, to cost $95,260. The building will be financed with a WPA grant of $70,902.

♦ El Paso, Tex. Construction work will be started March 1 on the proposed Bowie High School, to cost $200,000. The building will be erected on the pay-as-you-go plan, with two sections to be erected in 1940, and the third to be built when the money becomes available.

♦ The township high-school board at Lawrenceville, Ill., has completed a school-building program, involving the remodeling of the senior-high-school building, and the construction of a new building of four stories. The main floor with the present building has one of the finest library rooms in the state; the upper floor is devoted to such subjects as music, visual, and radio education. The other floors are given over to the fine arts, a lunchroom, a mechanics and agriculture room, and a complete health unit. The gymnasium which seats 2,500 persons, has a playing floor 72 by 100 ft. in size. The total cost, including the grounds and equipment, was $300,000.

♦ New York, N. Y. The school-building program of the city for the next year will be curtailed by $2,200,000, as a result of a reduction ordered by the city board of estimate. The capital-outlay budget was set at $116,064,802. This is $1,175,960 less than that proposed by the city planning commission some months ago. Under the reduced budget, the school-building projects for the Borough of Queens will be curtailed. The Forest Hills High School, which was to have cost $2,849,000, will be erected for $21,500 less, and the appropriation for the Woodrow Wilson Vocational School was reduced by $68,000. The proposed Jamaica Vocational High School is in a group of eighteen for which a general appropriation of $8,167,290 was granted.

♦ Santa Cruz, Calif. The board of education has begun the construction of a homemaking building for the senior high school.

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Left: An installation of Model "SF" SANI-DRI, an arrangement showing great economy of space.

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School Administration News

A SCHEDULE OF TEACHERS' MEETINGS

During the past three years, a series of joint teachers' meetings have been carried on by the city schools of Fort Atkinson, Jefferson, and Watertown, Wis. This tri-city, cooperative plan has been successfully carried on during a three-year period, and has proved interesting and helpful to the cities participating.

During the fall of 1939, one meeting was held in each of the three cities. On October 17, at Watertown, Dr. Stanley Ross, president of Wayland Junior College, discussed "Some Invariant Values." On November 14, Dr. Silas Evans, of Ripon College, spoke on "A Problem Arising Out of the Present Age of Confusion." On December 6, at Jefferson, Dr. Stephen M. Corey, assistant dean of the Graduate School of the University of Wisconsin, spoke on the topic, "Words Without Meaning."

For the spring of 1940 the meetings will be held separately in each of the three cities, and the speakers will present the same address on consecutive evenings. In February, Supt. Frank C. Bray, of Fort Atkinson, will speak on "The Fun of Teaching." In March, Supt. Ray S. Smith, of Jefferson, will discuss "The In-Service Training of Teachers," and in April, R. A. Buell will take up the topic, "Teacher Participation in School Administration."

ATLANTA MAINTAINS DEPARTMENT OF STATISTICS

The board of education of Atlanta, Ga., maintains a department of statistics and special services, which comprises five research workers and one typist, provided by the Works Progress Administration.

During the school year 1938–39 the work of the department was divided into five parts; namely (1) regular routine studies, (2) special administrative research projects, (3) participatory research, (4) public-relations broadcasts, and (5) special services of the audiovisual division.

Regular routine studies of various kinds are made regularly each year or semester, though attempts are made to improve the methods and processes used. For instance, experimental determinations of the junior- and senior-high-school load were made by means of the Douglass formula for the second semester of the year.

Much of the statistical section of the annual report of the superintendent consists of these regular studies. Some of the major studies made during the year included a study of pupil failures and nonpromotions in the various divisions; a study of the teacher load and average class size; a study of age-grade and pupil progress, holding power, and future enrollments; a study of unit costs, including current expenditures per pupil in daily attendance, for all of the various school divisions; a study of salaries for the annual budget.

The department of special research is available for any specific studies essential to the school program. Among the special projects of the year might be mentioned a proposed recodification of the rules and regulations, a study of the six-year high school, and numerous studies including merits of promotion and nonpromotion in producing pupil growth, salaries paid administrative and supervisory officers, adjusted tax rates in southern cities, comparative data on revenue from nonlocal sources, and data on retirement of teachers.

The adoption of the new state attendance register, together with the elaborate superintendent's annual report to the State Department of Education, represents hundreds of hours of painstaking compilation, involving examination of the individual registers, numbering over 3,000 for the two semesters.

The director of the department of statistics has been assigned the responsibility of carrying on a series of broadcasts designed to keep the public informed concerning the school program.

WORKING PUPILS FOUND SLOW

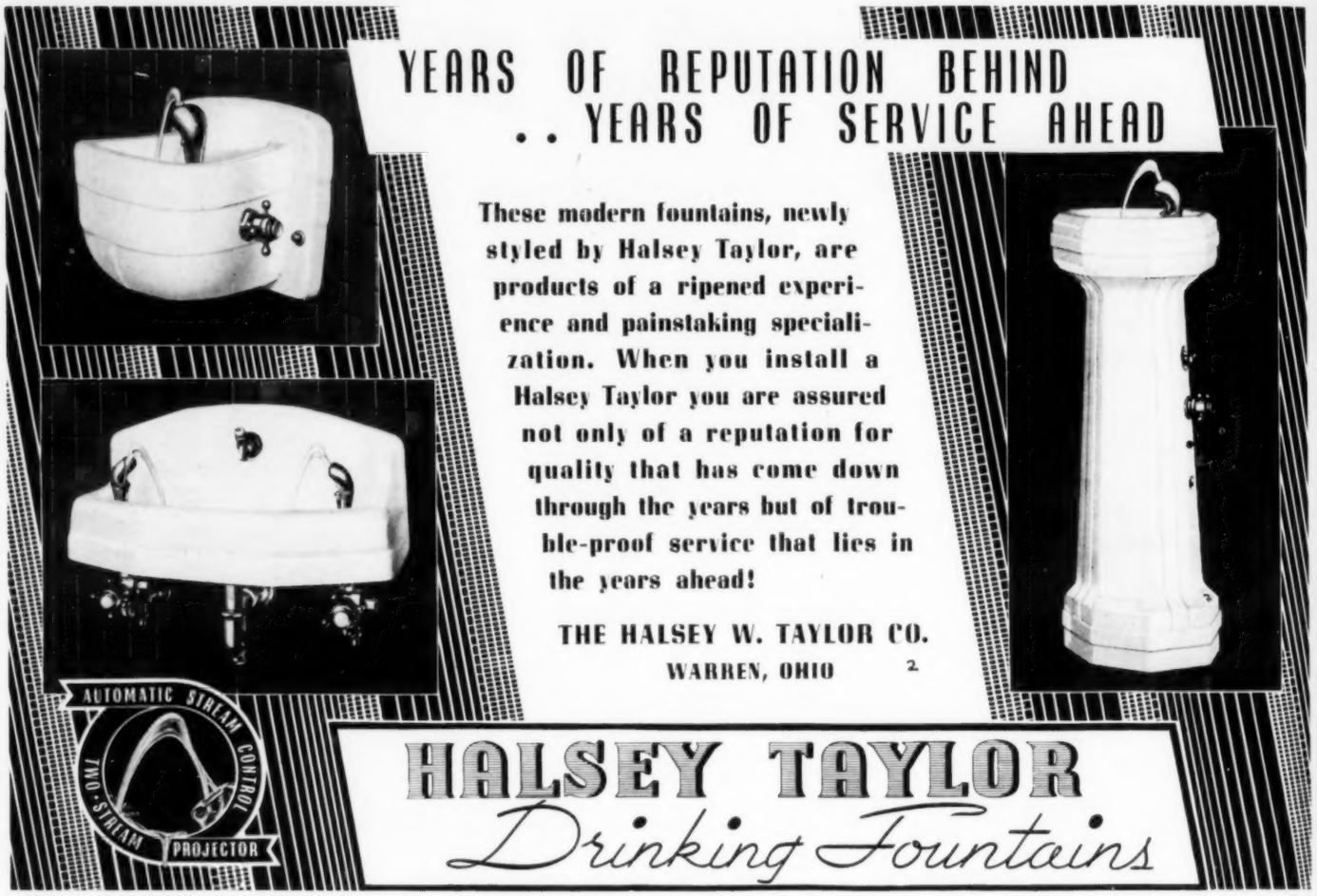
Self-made men have frequently argued that earning extra money is character building and soul satisfying. That thought, it would appear, has received a serious setback. After-school work has now been found to be detrimental to the pupil and a severe academic handicap.

A survey made public at a recent meeting of the New York City board of education shows that high-school students who work after school hours and on Saturdays make a poorer scholastic record than their classmates who do not work. The survey has found that 10 per cent more of the nonworkers passed all their subjects than did the workers. Those who work after school, regardless of the length of time, have a poorer record than those who do not. This is more pronounced in the case of freshmen than of seniors.

The study, conducted by Dr. Adolph Klein of the Haaren High School, covered 5,374 pupils. Of this number 21 per cent reported that they work afternoons, or Saturdays, or both. The number of hours worked per week ranged from one to fifty-four.

Working after school was found to be a definite handicap. It appeared that boys and girls spent so much time, effort, and energy on other than schoolwork that they did not have an opportunity to keep pace with their nonworking classmates. It was found that the fewer hours the pupil worked after school the better results he obtained in the classroom.

Dr. Klein believes that children who work should have special academic privileges. He suggests that teachers be notified of the pupils in their classes who have outside obligations, and then devote more attention to them. Homework burdens should be lessened and the school load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in general rearranged. Enough students are working after school to warrant an investigation into the problem to see what can be done to ease their school program, according to Dr. Klein.

It is the conviction of Dr. Klein that many of these working pupils are failing in one or more subjects, which causes them to become discouraged, and then drop out of school. Permitting them to go on without taking cognizance of the handicap under which they attend school makes for increased retardation, which is uneconomical, according to Dr. Klein. Continued school failure, he said, will make for more failure with a consequent increasing distaste for and ultimate abandonment of school by those who need it most.

SCHOOL ADMINISTRATION

♦ Stamford, Conn. The board of education has received a suggestion from Mr. George T. Barrett, one of the board members, proposing a revision of the school hours so that school children may avoid the rush hour of the factories and be saved from street hazards.

♦ The county school board of Dade County, Ga., has modified its previous rule, which prohibited the county high school from participating in intercounty athletics. Students of the junior or senior high schools are now permitted to have one intercounty basketball game each week. Students who participate in these games must have a passing mark of at least three fourths of his or her subjects. They must be accompanied to and from games by at least one teacher, who is held responsible for the conduct of the students. All games must be played at night.

♦ Springfield, Ill. A textbook rental plan will be introduced in the public schools this semester. Plans for the system are now being worked out.

♦ Ironwood, Mich. The board of education has approved a local school history project to be worked out in cooperation with the Michigan WPA writers. The research and writing will be done by writers on the project, and the school district will be obligated to publish it.

♦ Hazard, Ky. An adult-education program has been inaugurated under the direction of the WPA and is intended to offer special training to persons who have not had an opportunity to attend school.

♦ Iola, Kans. The board of education has approved plans for an evening school for adults. Classes will be held in the senior high school. The cost of instruction will be $2 for fifteen lessons, plus the cost of books.

♦ The board of education at Oshkosh, Wis., has adopted a new course in physical and health education for the public schools. The course is the result of a year's experimental work in the eleven schools and will be revised from time to time as conditions warrant. The physical-education department has held a number of conferences for the purpose of setting new standards for the conduct of the health and physical-education program in junior and senior high schools.

A physical-education demonstration was held last June, in which 2,000 children participated in a program of games, sports, stunts, exercises, and tactics for the entertainment of parents and school patrons who attended. The demonstration will be held each year and will be financed with funds provided by the board of education.

♦ In a series of experiments conducted with groups of students at the Freeport High School, Long Island, N. Y., it is revealed that students show greater interest and more adaptability to playing the organ than the piano. Miss Virginia C. Thomas, head of the Hammond Organ School, in New York City, who conducted the experiments, declared that, as a result of her experiments, she concludes that students find in the organ a wider range of tonal color than any other musical instrument, and it stimulates many other musical instruments familiar to them.

♦ Kalamazoo, Mich. At the request of Supt. Loy Norrix, the school board has given permission to Miss Pearl Schoolcraft, principal of the Westnedge School, and her faculty, to work out during the year a plan of organization whereby a more continuous growth and development for children may be possible. During the past year the school faculty has worked on plans for a reorganization of their school in preparation for the proposed change. Under the new plan, children will be permitted to progress according to individual ability. Careful tests will be made of each pupil to determine whether he or she is able to advance to the next room or goal.

♦ McCook, Nebr. The school board has approved a suggestion of Supt. F. L. Holmes, calling for the establishment of a vocational course and a four-year home-economics course in the high school.

♦ Middlesboro, Ky. A new course in distributive education has been established in the high school this year. The course has attracted a large number of students.

♦ State Supt. John W. Brooker, of Kentucky, has announced a five-point program for the improvement of the state's school system. Among the proposals are additional funds for the schools, changes in teacher requirements, preservation of the state school code, improvement of instruction, and development of better relations between the independent and county school systems.

♦ Kingston, Mass. A new marking system has been installed in grades nine to twelve. A mark of A denotes superior work, with a 90 to 99 average; B denotes good work, with an 80 to 90 average; C denotes satisfactory work, with a 70 to 79 average; D denotes unsatisfactory work, with improvement needed; and F denotes failure, with an average below 59.

♦ The visual-education committee of the Smith County, Tex., schools has recommended that each school contribute $15 toward the purchase of motion-picture films. The films will be kept in the county school library and will be rotated as needed by the various schools.

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The Census and the Educator

The year 1940 marks the 150th anniversary of one of the most unostentatious, and at the same time most all important, of the functions of the American government: the Decennial Census of Population. It will be the sixteenth time that inquisitive men and women, ferreting for the Bureau of the Census, will go out into our highways and byways and collect materials for a statistical portrait of this country.

In honor, partly, of the anniversary, but more especially because of the increasingly important function of statistics in a complex world, the Sixteenth Decennial Census will be the most comprehensive and detailed of all previous enumerations. For the first time in our history a census of living quarters will be taken; and also for the first time, questions on the population schedules will be asked, the answers to which will give educators an exact picture of the extent of internal migration, thus enabling school authorities better to plan the necessary expansion of the school systems on the basis of trends in population shift.

Illiteracy is no longer an American problem, so information concerning it will not be collected. Instead, our people are being asked for the exact number of years they have attended schools of one kind or another, or the equivalent in years of such self-education or private tutoring as they have had.

Another innovation in 1940's schedules is the series of questions on earnings. The tabulations of these questions will show us just what the usual earned income of our citizens is, and will enable us to gauge the need for an expansion of the school-lunch program, or for increases in public assistance generally. The same questions will, for the first time, give an accurate national survey of teacher earnings. The results of the tabulations will be useful to school authorities in considering salaries for the teaching profession.

Many other censuses besides those of population and housing will be taken in 1940. The quinquennial survey of agriculture and the decennial measurement of irrigation and drainage projects, will be made coincidentally with the first two, beginning on April 1, 1940. Regular censuses of manufacturers, taken biennially; of business, first started in 1929, and taken two times since, in 1933 and in 1935; and of mines and quarries, a ten-year survey, began in January.

But the most broadly important of the projects is that covering population. The Bureau of the Census is launching a campaign for public interest and cooperation in this endeavor, for the first time in its history; and it hopes that as a result, the American people will be more willing to give time and thought to their answers to the questions asked by the census enumerators than ever before, and that as a result the census statistics will be more complete and accurate than has been possible in the past.

It is largely a matter of public education, to make our citizens aware of the importance — to them and to the country — of the census activities. Broad committees of businessmen, industrialists, professional men and women, and public officials are being formed in every city and town of the country to promote the census; undoubtedly in every case members of school boards have been asked to serve, for the schools are one of the most important training grounds for making people aware of the census.

Once the young people — students in the grade- and high-school classes of this country — are interested in the project, its scope and its exciting possibilities for helping America plan its way to prosperity, the job is half done. Parents will learn the value of the census once the children really have been "sold" on it. It is the teacher's task to see to it that every pupil is made aware of the coming event, and of some of its values. If every child goes home and talks up the census to his parents, a finer educational job will have been done for the Bureau than could otherwise be accomplished by extensive meetings and programs of education for adults alone.

And the school authorities' stake in the census is large enough to make it of personal urgency to them to see that the school children know about it.

RULES AND REGULATIONS

♦ The school board of Norwood, Mass., has passed a rule, asking all employees of the school system, whenever possible, to establish and maintain a legal residence in Norwood.

♦ A suit to determine whether city and county school boards may legally pay dues to the Kentucky School Board Association has been filed in a Kentucky Circuit Court. The State Board of Education is made the defendant in the case.

♦ Aurora, Ill. The west-side school board has ruled that, hereafter athletes suffering injuries at school games, may designate their own physician instead of being assigned to the clinic.

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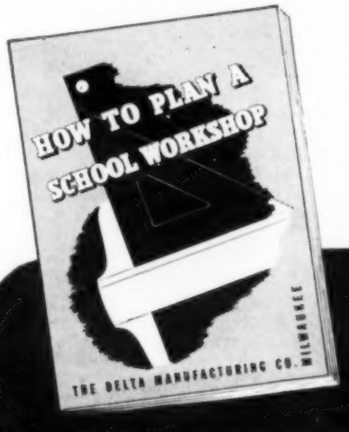

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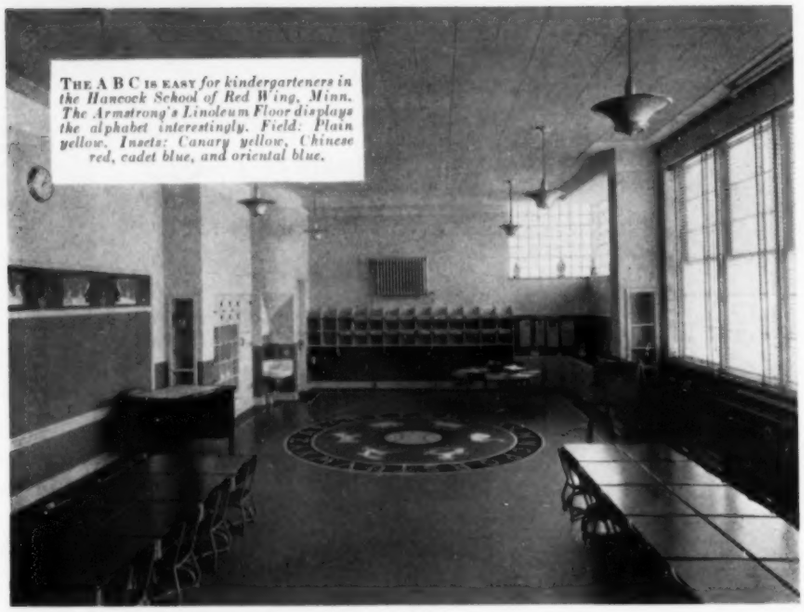

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OKLAHOMA IS ABLE TO SUPPORT SCHOOLS

T. G. Napier[1]

How does Oklahoma rank in ability to pay the necessary state appropriations? Our state is not in the most wealthy group; yet, it is not in the poorest group of states. Our state has 1.96 per cent of the total population. The people of Oklahoma paid .96 of one per cent of all the income tax paid into the federal treasury for the year ending June 30, 1939. If the second figure be divided by the first one the ratio is .49. On this basis a ranking or an index figure can be calculated for each state.

It is interesting to note that the following states rank below Oklahoma on this basis: Alabama, Arizona, Arkansas, Georgia, Idaho, Iowa, Kansas, Kentucky, Mississippi, Montana, Nebraska, New Mexico, North Carolina, North Dakota, Oregon, South Carolina, South Dakota, Tennessee, Utah, Vermont, West Virginia, and Wyoming. The other states rank above Oklahoma in income or wealth measured by this index. Massachusetts had an index of 1, with 3.41 per cent of the population and 3.42 per cent of the national income. The states having an index greater than 1 are as follows: Ohio, Rhode Island, New Jersey, California, Delaware, Illinois, Maryland, Michigan, Nevada, Connecticut, and New York. The only state to rank above an index of 2 is New York, which has an index of 2.56.

West Virginia, which has an index of ten points below that of Oklahoma, will spend $25,993,100 during the school year 1940. "The local share will be $14,073,785. In percentage the local share is 46.2 per cent and the state aid 53.8 per cent."[2] In other words this state has appropriated more money for state aids of schools than Oklahoma has by $2.573,785. Ohio which is in the wealthy group of states has the schools closed down in one of her largest cities. It appears that the financial difficulties being experienced by schools over the nation has resulted more from the attitudes of the legislators than from the ability of the state to pay.

[1]Superintendent of Schools, Collinsville, Okla.

[2]"Financing Public School Program of West Virginia," Edward A. Bolling, SCHOOL BOARD JOURNAL, December, 1939.

NEW ACTIVITIES IN NEW BRITAIN, CONNECTICUT

The board of education of New Britain, Conn., with the cooperation of Supt. Carlyle C. Ring, has sponsored important new activities during the year 1939. These activities are centered largely in three fields:

In the field of curriculum revision, a long-term program was carried out with the aid of the teachers, through a series of lectures in various fields of curriculum revision. This was followed by intensive studies of one or more fields each year. Up to date, revision reports have been made in the fields of mathematics and practical arts. Work has been started on the social studies, on individual differences and special education, and special work is being done on the secondary level for noncollege students.

A long-term building study was carried out by the superintendent and a report submitted on the possibilities of the course over a ten-year period of abandoning four obsolete buildings and the improvement of other school facilities so that children will be housed in fireproof and modern school buildings.

During the year considerable attention has been given to teacher selection by both the superintendent and the board. The purpose was to work out an objective plan for the selection of teachers for the city schools for use during the coming year.

NEW SCHOOL BUILDING PROJECTS IN INDEPENDENCE, KANSAS

The board of education in Independence, Kans., has completed an unusual school-building program, which involved the unique feature of consolidation. Probably no other city of its size has gone so far in carrying out a consolidation program, and the board feels that economically the procedure is sound. The board believes that there will be a saving effected in overhead expenses, that better lighting and heating facilities will be provided, and that a slight reduction in the teaching staff will be effected.

Beginning with January, 1940, the elementary schools of the city were reorganized, when two large elementary buildings were completed and occupied. The project, which was financed with the aid of the PWA, cost a total of $500,000.

The Lincoln School, which houses the pupils formerly enrolled in three old buildings, contains eighteen classrooms in addition to an art room, a music room, two kindergarten rooms, a library, a lunchroom, and an assembly room seating 750. The building has all modern equipment, including an electric program-clock system, a public-address system, a radio broadcasting system, movable classroom furniture, and univent heating. The school has a present enrollment of 700 pupils.

The Washington School, which houses the pupils from two old schools, is practically a duplicate of the Lincoln building, and contains fourteen classrooms. It has a present enrollment of 450 pupils.

The third building, the Riley School, which houses 300 pupils, was remodeled and enlarged, and equipped with all modern conveniences.

ACHIEVING DEMOCRACY

Impractical as it may seem, the way to meet the assumption of too much power in the hands of any person connected with the school, is to develop a community spirit which makes it impossible for anyone to survive who seeks to acquire dictatorial powers. If we can in the school create an emotional climate which will make all feel at home, at ease and unthwarted, we will go far toward eliminating the envy and desire for power on which dictators feed.—*Howard McClusky.*

THE 1940

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School Board News

PENNSYLVANIA SCHOOL DIRECTORS WILL MEET IN HARRISBURG

The Pennsylvania School Directors will meet for their forty-fifth annual convention, in the forum of the Education Building, in Harrisburg, on February 2. Chester H. Gross, president of the association, will preside.

A helpful and interesting program has been arranged. Among the important speakers who will appear on the program are Dr. Ben Graham, of Pittsburgh, who will talk on "Reorganizing the Secondary-School Program"; Dr. Lee Driver, formerly in the Department of Public Instruction; and Dr. Francis B. Haas, State Superintendent, who will give a talk. A number of sectional meetings have been arranged for school-board members in first-, second-, third-, and fourth-class districts.

PROGRESS IN SAN BERNARDINO, CALIFORNIA

The city schools of Bernardino, Calif., recently organized a Division of Vocational Education. Nine trades form the nucleus of a trade instruction program which is to be expanded during the next few years. At present, machine-shop practice, printing, agriculture, household training, automotive mechanics, electricity, house painting and decorating, carpentry, and the clerical trades are being taught.

The program has attracted wide attention in the San Bernardino Valley where there are no other such facilities offered. It has gained the full support of employers, employees, and the entire community, and placements are made as rapidly as the school can turn out qualified mechanics. All of the teachers have been recruited from industry and are master mechanics in their fields.

The program has taken the form of a work-and-learn plan, allowing students to spend one half of their time in industry and one half in school.

The carpentry classes are building their own plant. The painting classes are doing the decorating, and the electricity classes the wiring. Each class is operated on a production schedule.

Under the plan, a pupil of any age or educational background, is eligible to enter classes, provided he can pass a test showing him to be capable of learning the trade.

BUDGET CUTS FORCE RADICAL ECONOMIES IN NEW YORK CITY SCHOOLS

President James Marshall of the New York City board of education, in a recent letter to Mayor LaGuardia, gave a picture of conditions in the city school system resulting from the budget cuts forced upon the board.

According to Mr. Marshall, lack of funds has led the board, among other devices to refrain from using teaching positions, and this has resulted in classes too large to be taught. He informed the mayor that, in some schools, more than 35 pupils are being taught, and in hundreds of schools as many as fifty pupils are crowded into one room, often with two in a seat. Vocational schools, junior high schools, and elementary schools have additional thousands of oversize classes. In his letter, Mr. Marshall deplored the shutdown of community centers, the failure to appoint principals, the restriction of evening classes, and the denial of substitutes for short-term classes. He deplored the use of substitutes in place of regular teachers and the fact that a number of vacancies have been left unfilled.

Mr. Marshall pointed out that the necessary economies have been made, but all at the expense of educational opportunity for children and adults. Some of the economies, he said, are nothing more than postponed expenditures and cannot be postponed indefinitely. In the case of supplies there have been reserves to which the schools could turn, but these reserves are rapidly being depleted.

BOARDS OF EDUCATION

♦ Mobile, Ala. The school board has taken steps to avoid overcrowding on school buses. A check of the buses will be made once every two months to determine the condition of the brakes, stearing gear, door control, and general condition of the bus body. In addition, the highway patrol makes regular inspections of the buses from an operation standpoint.

♦ North Platte, Nebr. The school board has approved night football for the high school but has denied the use of school funds for financing the program. The high-school athletic staff must devise some plan for financing without using school funds.

♦ Athol, Mass. The school board has approved increases in tuition rates for nonresident students, ranging up to $9 per student. In the senior high school the rate has been increased from $88 to $97; in the junior high school, from $54 to $59; and in the elementary schools, it will remain at $55.

♦ Haverhill, Mass. The school board ended the year 1939 without a deficit, under a plan accepted by four members of the board. It called for the closing of the schools on December 21 and 22, in addition to the regular Christmas vacation during the last week of December. Teachers lost 2¼ days' pay.

♦ Boston, Mass. The school board has approved a reorganization of six departments of the city school system into a bureau of child accounting to include central employment and statistics divisions. The central agency is planned to provide school administrators with means for more ac-

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curate evaluation of the accomplishments, abilities, and capacities of individual children.

♦ Des Moines, Iowa. The board of education has taken steps toward the installation of fireproof and smokeproof stairwells in two schools, and improvements in three others.

♦ LaHarpe, Ill. The board of education has decided to continue the present successive-expiration insurance program adopted a few years ago. Nonassessable mutual-insurance coverage has been rejected in favor of the renewal of three policies in stock companies, aggregating $16,000 of the $80,000 coverage for buildings and contents. The total coverage is approximately $80,000, and under the program, one fifth of the entire premium comes due annually.

♦ Brookline, Mass. The school board has approved the establishment of a training system for assistant janitors. The proposal was suggested by Dr. Thomas P. Kendrick, who sought to eliminate what he called an injustice, and to provide for possible emergencies. He pointed out that younger members of the staff are being promoted over older members because the latter do not know how to operate the equipment.

♦ Greenwich, Conn. The board of education has appointed a committee to study a way to evaluate school fire losses. The purpose of the study is to clarify the responsibility of the board for setting values on school property in case of fire. Among other things, the committee will study the advantages of the town carrying its own insurance, particularly with the newer, fireproof school buildings now being built.

♦ Danvers, Mass. The school board has accepted an offer of the new radio station, to allow the school system to present a fifteen-minute radio program once each week.

♦ Mt. Morris, Ill. The grade-school board of education, in cooperation with the Federal Surplus Commodities, has approved a new plan for serving hot free lunches to pupils in the county. The menus will be prepared by a supervising home economist and a cooking teacher and the lunches will be prepared and served by two trained women. The school assumes the responsibility of supervising the pupils during the lunch period.

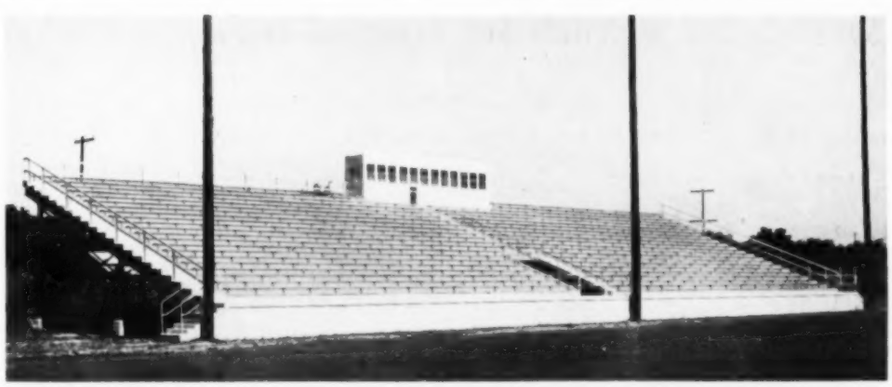
♦ Wakefield, Mass. A special committee has been appointed to study the present course in English and to prepare a new, revised course.

♦ Belleville, Ill. The board of education of Belleville Township High School has made provision for the appointment of a medical board to make physical examinations of high-school athletes. The medical board of examiners will consist of three physicians, to be named by the local medical society, to make such examinations. The board will be concerned with borderline cases only and its decisions will protect the school board from liability where boys engage in athletic events.

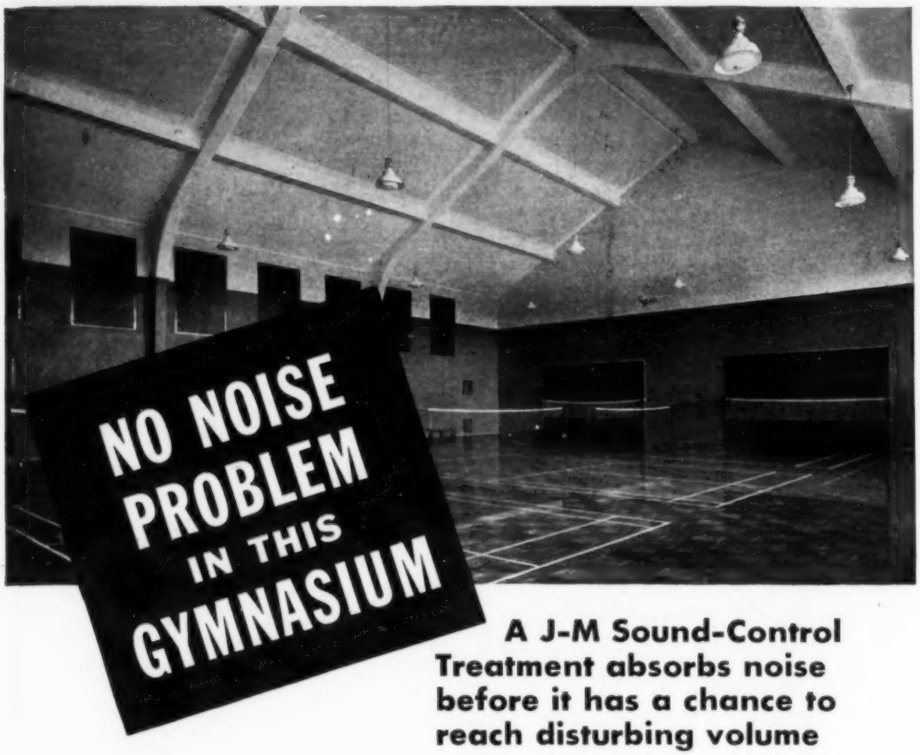
♦ Visalia, Calif. The board of education has completed a junior-high-school building, at a cost of $231,000. Bonds have been voted in the amount of $397,000 for the erection of a junior college plant, which is to be completed ready for occupancy in September, 1940.

♦ Brookline, Mass. The school board has voted to establish a training school for assistant janitors.

♦ Redding, Calif. Plans have been started for a new six-room school building to provide housing facilities for an increase in school enrollment. An eight-room school was erected four years ago, but the population has nearly doubled.



The Jefferson Davis Parish School, at Jennings, La., is the proud owner of an all-steel grandstand. The seating capacity of 1,850 has been found necessary for football games, field meets, and school pageants. An insulated steel press box gives full protection to newspapermen and radio broadcasters. The field is lighted for night games.— Photo by courtesy of Pittsburgh-Des Moines Steel Company.



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SUMMARY OF ALLOTMENTS FOR PWA NON-FEDERAL EDUCATIONAL BUILDING PROJECTS CLASSIFIED BY TYPE[1]

Summary of the United States and Territories	*No. of Projects*	*No. of Buildings*	*No. of Classrooms*	*No. of Students*	*Loan*	*Grant*	*Estimated Cost*
Elementary School	2,168	3,060	16,643	665,720	$13,044,518	$ 81,582,528	$ 196,879,573
High School	1,954	2,305	16,870	674,800	20,113,724	133,927,676	329,554,841
Consolidated	319	369	2,012	80,480	1,293,771	9,708,102	22,450,273
Comb. Elementary and High School	709	793	5,572	222,880	4,435,479	37,830,115	94,423,722
Vocation and Other Training Schools	107	202	541	21,640	257,900	10,800,063	26,563,566
Colleges and Universities	699	1,315	408	16,320	30,663,968	85,983,087	211,047,822
Auditorium-Gym.	597	624	304	12,160	902,177	13,242,608	31,161,156
Public Library	102	113	...	.....	200,100	5,341,079	12,882,120
Comb. of two or more of the above	672	3,921	17,265	690,600	22,194,433	103,111,250	257,434,060
TOTAL	7,322	12,702	59,615	2,384,600	$93,106,070	$481,526,508	$1,182,397,133

[1]Figures released by Public Works Administration, Federal Works Agency, December 26, 1939.

SCHOOL ADMINISTRATION

♦ Snohomish, Wash. A complete public-address system, with recording equipment, has been installed in the high school this year. The recording equipment, which is one of the best, has produced some fine recordings. One hundred students taking work in speech are making recordings at different intervals during the semester. The completed record will be their report card. The system is also being used for band, orchestra, choir, and music soloists. It is planned to build up a good library of recordings.

♦ Milford, Mass. The school board has named a committee to work with the fire-department chief in outlining a fire-prevention program for the schools. The program includes the checking of fire-alarm systems and the improvement of the fire-drill system now in use.

♦ Salem, Mass. The school board has approved a plan, calling for an advisory committee to assist in drawing up weekly radio programs. A new broadcasting station just established, has offered the school board the use of a ten-minute period one morning each week for announcements of school activities.

♦ As one of the features of "American Education Week," the public schools of Alpena, Mich., showed motion pictures of the school activities under the title, "What Becomes of Your School Dollar." Approximately one thousand feet of film was shown, most of which was under the heading of instruction. Other headings were general control, operation, maintenance, auxiliary agencies. Pictures were shown of the activities in the various schools from the kindergarten through the high school. A commentator explained the films as they were shown.

♦ Bridgeport, Conn. At the suggestion of the school board, Supt. Worcester Warren has prepared a merit system to govern applicants for teaching positions in the schools. The plan calls for competitive examinations for filling vacancies in the elementary schools and involves the classification of teachers and employees.

♦ Covington, Ky. The board of education has voted to raise the requirements for teaching positions to a standard four-year college education. The rule which becomes effective in the fall of 1940, does not affect teachers already employed. Formerly, teachers with two years of university training were eligible for employment as elementary teachers, and those with three years' training for junior-high-school teachers. Senior-high-school teachers must have a college degree.

♦ Long Beach, Calif. A new publication entitled "An Administrative Code and Rules and Regulations of the Long Beach City Schools," has just been issued by the board of education. The booklet, which was prepared under the direction of Supt. Kenneth E. Oberholtzer and members of the board of education, is a complete guide for the schools, containing everything from the responsibilities of caretakers, to the powers, functions, and responsibilities of the board of education.

SCHOOL-BOND SALES

During the month of November, school bonds were sold in the sum of $9,679,950. Of this total, $6,000,000 were sold in New York State. The average interest rate on December 1 was 2.72 per cent.

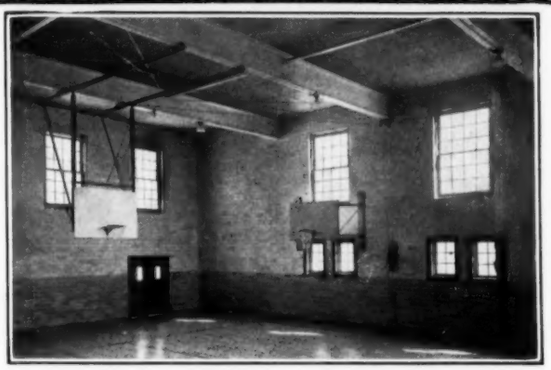
During the month, tax-anticipation notes and refunding bonds were sold in the sum of $2,079,450. Ohio accounted for $1,233,450.

SCHOOL-BUILDING CONSTRUCTION

During the month of November, contracts were let for 8 school buildings in the states west of the Rocky Mountains, at a cost of $172,400. Eleven buildings were reported in preliminary stages, to cost an estimated $2,511,000.

In 37 eastern states Dodge reports contracts let during the month of November for 179 educational and science buildings. These will have a floor area of 1,818,000 square feet, and will be valued at $9,736,000.

MEDART BASKETBALL BACKSTOPS



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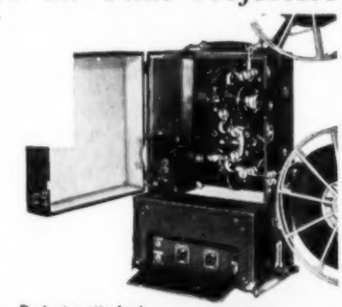

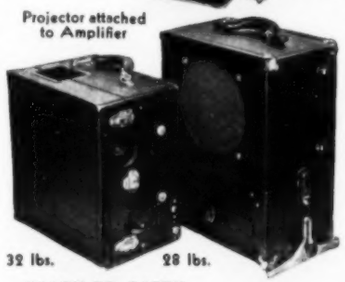

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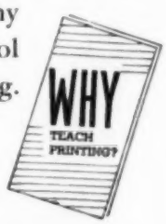

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NEWS OF SCHOOL OFFICIALS

● Mr. Robert Toborg has been named secretary of the school board at Muscatine, Iowa.

● The school board at Altoona, Pa., has reorganized with the election of William F. Lehmann as president; J. Foster Meck as vice-president. Paul R. Reynolds, a former president, has been re-elected for a six-year term. Samuel C. Bowen, a former board member, was returned to the board after an absence of six years. W. N. Decker, who retired as secretary in July, 1938, was elected to membership. Park S. Hite is the new member, and the holdover members are Benner M. Wilson and W. R. Zern. Robert L. Thompson is secretary.

● Mr. B. T. Bay has been elected president of the school board at Ireton, Iowa.

● Mr. Frank G. Smith has been elected president of the school board at Portland, Oreg.

● The school board at Cumberland, R. I., has reorganized with the election of Robert J. Habershaw as president, and Henry J. Sicotte as clerk.

● Mr. Thomas Bevelock has been elected president of the school board at Dunmore, Pa. He succeeds Martin Monahan.

● Mr. Gibson Caldwell has been elected president of the school board at McKinney, Tex. Other members of the board are James H. Merritt, vice-president; A. H. Eubanks, A. M. Scott, Avery Dowell, and Will J. Rhea. J. R. Ryan is secretary of the board.

● Mr. Chester Jubin has been appointed secretary of the school board at Lake Placid, N. Y. He succeeds the late Edwin H. Ford, who had been secretary for sixteen years.

● The Iron River Township school board of Iron River, Mich., has elected H. H. Frailing as president. He succeeds the late E. J. Van Ornum.

● Mr. Forrest Andrews and Dr. R. P. Oppenheimer are the new members elected to the board of education at Knoxville, Tenn. Mr. Andrews, who is a trustee of Peabody College, Nashville, is an attorney and businessman, and Dr. Oppenheimer is a practicing physician and former board member.

● Mr. Alfred Lacaillade has been elected president of the school board at Nashua, N. H. He succeeds Arthur O. Burque.

● Mr. C. Frank White, of Batesville, Ark., has been elected president of the Arkansas School Board Association. Other officers elected are Ben C. Isgrig, vice-president; and V. E. Mordon, Bauxite, secretary.

● Mr. James Brislin has been elected president of the school board at Luzerne, Pa.

● The school board at Westerly, R. I., has reorganized with the election of A. M. Gencarelli as president, and Rogers E. Trainer as clerk.

● Mr. Frank Frederickson has been elected president of the school board at Spring City, Pa.

● John Carlson, a member of the board of education of Kansas City, Kans., for thirteen years, died at his home on December 3.

● Mr. August Baush, of Holyoke, Mass., who has been a member of the school board of that city for thirty-three years, has never missed a meeting.

● Mr. Abraham Hooge has been elected president of the board of education at Windom, Minn.

● Mr. Roy Woods has been elected president of the school board at McKean, Pa.

● Mr. Earl D. Handy has been elected president of the school board at Buckingham, Pa. Walter K. Young has been named vice-president.

● Mr. Wilbur S. Cross has been elected president of the school board at Waynesburg, Pa. John M. Patterson was named vice-president.

● Miss Alice S. Coe retired as secretary of the board of education at Englewood, N. J., on November 30, after more than thirty years of service. In point of service Miss Coe had been longer with the schools than any other associate, except one board member and the superintendent. Her efficiency and long years of experience had made her an invaluable source of ready reference both for members of the board and others who needed information relative to school affairs.

● Mr. Frank W. Magill has been elected president of the school board at Danville, Pa.

● Mrs. William Morgan has been elected secretary of the school board at Allegan, Mich. She succeeds the late Carl W. Warner.

● Mr. Joseph L. Ray has been re-elected president of the school board at Sunbury, Pa.

● Dr. Herman W. Hesse has been elected president of the board of education at Savannah, Ga.

● Mr. Andrew J. Brown has been elected president of the Monongahela, Pa., school board.

DR. PHELPS HONORED

The Associated Exhibitors of the National Education Association have announced that the American educational award for 1940 will be conferred upon Dr. William Lyon Phelps. The presentation will be made by President Ben Graham, of the American Association of School Administrators, during the convention at St. Louis, in February.

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"The Sound of Tomorrow"

New Books

A Self-Rating Scale for School Custodians

By Wayne E. Mase. Paper, 24 pages. Bulletin No. 10, October, 1939. Published by the Kansas State Teachers' College, Emporia, Kans.

When the selection of the janitorial staff is left entirely to the board of education, there is a strong tendency on the board's part to select someone because he is a worthy person who needs a job. The board is likely to forget that the janitorial work calls for a man who is first of all an enthusiast. It calls for a man who has a good influence on students; it calls for a man who has good judgment and who exercises this quality at all times; it calls for a man who knows how to keep his mouth shut when it is necessary. The position calls for a man who is not easily ruffled and who will give generously of his time when emergencies arise.

The present scale for janitors is an attempt to furnish a comprehensive outline by which custodians may improve their efficiency and their personal qualifications through self-rating. The scale makes it possible for the custodian to check himself and to find weaknesses where they exist.

The Teacher Looks at the Teacher Load

Paper, 274 pages. Bulletin No. 5, November, 1939. Published by the Research Division of the National Education Association, Washington, D. C.

In recent years the problem of teacher load has assumed new significance. Step by step the burdens upon classroom teachers have become heavier. In the present study, teachers say that pupil-teacher ratios do not fully indicate the complexities and burdens of teacher load. Particular attention should be given to cumulative effects of the policies of a school system.

The study directs attention to those aspects of present teaching situations which, in the judgment of classroom teachers, are inimical to their best professional service, their pupils, and themselves. The study discusses class size and daily pupil contacts, the teaching periods per week, the hours per week devoted to out-of-class activities, the use of teachers' attitudes as a basic factor in later analysis, satisfaction with teaching assignments, the pattern of teaching-load pressures, major pressure areas, and differences in load pressure at various grade levels.

Materials for Consumer Education

A selected bibliography. Paper, 21 pages. Bulletin CS-61 revised, September, 1939, of the Consumers' Counsel Division, Agricultural Adjustment Administration, Washington, D. C.

A bibliography for the use of teachers and students of consumer education, prepared in response to a demand for such information on courses of study, study guides, textbooks, motion pictures, and other visual materials.

Status of Teachers' Salary Schedules for 1939-40

A Bulletin issued by the Research Division of the National Education Association, Washington, D. C.

Progress has been continued toward full restoration of depression cuts in teachers' salaries in large cities of the country but in some school systems the salaries paid are still falling short of the basic provisions of the salary schedule.

The Research Division, in its latest Bulletin on teachers' salary schedules, presents the results of an inquiry begun in September, 1939, in cities of over 100,000 population.

The findings in the study indicate that in 37 cities, or 42.1 per cent, the annual increments for 1939-40 have been granted, and no cuts are in effect.

In 5 cities, or 5.7 per cent, the final decision or salary policy for 1930-40 cannot be made until later in the school year, but salaries are being paid in full.

In 42 cities, or 47.7 per cent, the basic salaries are not in full effect because of percentage cuts, increments withheld, suspension of schedule, shortened school term, or some other combination of factors.

In 4 cities, or 4.5 per cent, the basic schedules are being followed without cuts, but the schedules are new and provide lower salaries than were paid during the depression.

Two tables have been prepared giving the details for each city on the status of the schedule and the basic minimum and maximum salaries scheduled for white teachers in elementary, junior high, and senior high schools. Another table refers to junior high schools and is limited to cities where a difference in salaries is made between junior high and senior high schools. Twenty-seven schedules, or 30.7 per cent of the total, are of the preparation or single-salary type.

Inspected Electrical Equipment

Paper, 97 pages. Issued by the Underwriters' Laboratories, Inc., 161 Sixth Ave., New York, N. Y.

A supplement to the May, 1939, list of inspected electrical equipment.

One Thousand School Fires

Paper, 72 pages. Price, 35 cents. Issued by the National Fire Protection Association, 60 Batterymarch St., Boston, Mass.

This booklet is a revised edition of a record of school fires, first published in 1927 and revised to date. The tables in the text are taken from reports of fires which have occurred since January, 1928, but major school fires which occurred previous to that date have been included. Considerable information is given on the loss of life in school fires, on the use of fire exit drills, fire loss in fire-resistive schools, and life safety from school fires.

Films on War and American Neutrality

Paper, 45 pages. Prepared by the Motion Picture Project of the American Council on Education, 744 Jackson Place, Washington, D. C.

This list of films has been prepared to assist the schools and the American public in the achievement of the American objectives. There is a detailed description of each film, followed by the project's appraisal, and a list of suggested questions for student discussion, notes on the sources of the films, and a list of selected references.

Procedures in Salary Scheduling

Bulletin 1, Organizing for Work; Bulletin 2, What Facts Are Needed; Bulletin 3, Local Studies of Teacher Status; Bulletin 4, Estimating Costs of Salary Schedules; Bulletin 5, Presenting the Facts; Bulletin 6, The Story of Salary Scheduling in Fourteen School Systems. Published by the Research Division of the National Education Association, October, 1939.

History of Education Chart

By Lester B. Sands and John C. Almack. Price, $1. Published by the Board of Trustees, of Leland Stanford Junior University, Stanford University, Calif.

This outline is intended for students pursuing a first course in the general history of education and for graduates looking for direction in reviews. It is topical in form, with the topics arranged in chronological order to furnish a picture of movements and of national developments.

The references are selected and suffice to cover the range of the field. Special stress is laid upon modern trends and influence.

Report of Committee D-12 on Soaps and Other Detergents

Paper, 21 pages. Published by the American Society for Testing Materials, 260 South Broad St., Philadelphia, Pa.

LEADERSHIP

depends as much on hidden values as on outward appearances—important as they may seem. It is the hidden values in children or books that determine performance and capability day in and day out. « « « And it is the hidden values built into Binders Board which give the right foundation for the construction of textbooks that are bound to last. That is why such books are preferred by experienced buyers for they have learned that books with covers of Binders Board will long outwear those bound in other materials. « « « Experienced textbook buyers also make sure of obtaining what they want by including this clause in all book orders.

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BOOKS BOUND IN BINDERS BOARD ARE BOUND TO LAST

The report contains the six new specifications for soaps and detergents and a new method of testing special detergents for determining the carbon dioxide in caustic soda, and analytical procedures for trisodium phosphate and sodium.

In addition to the testing work completed during the year, the committee is preparing specifications and methods of test for liquid and paste soap, scouring powders and soaps, and other phosphates and silicates. A study is being made of dry-cleaning and metal-cleaning detergents.

Without Machinery

By Paul R. Hanna, Gladys Potter, and William S. Gray. Cloth, 288 pages. Price, 92 cents. Published by Scott, Foresman & Company, Chicago, Ill.

Here is a charming book for children. It tells of the many things which are made without the aid of machinery. The child reader is carried to many lands and told by word and picture of the way people make their homes, their clothes, and prepare their food.

Purchasing for Small Cities

By Russell Forbes and members of the staff of Public Administration Service. Paper, 22 pages. Price, 50 cents. Bulletin No. 66, 1939. Published by the Public Administration Service, 1313 East 60th St., Chicago, Ill.

This manual, the second edition of a booklet prepared in 1932, endeavors to meet two main objectives in purchasing procedure. It suggests how substantial savings can be made through joint purchasing by several local agencies and through satisfactory purchasing procedure. It tells how to establish a purchasing system, how to operate the purchasing department after it is once established, and suggests the necessary accounting forms and purchasing procedures. The manual will be found practical and reliable by administrators and others interested in purchasing procedure.

Broadcast Receivers and Phonographs for Classroom Use

Paper, 95 pages. Published by the Committee on Scientific Aids to Learning, New York, N. Y.

A general discussion of the factors to be considered in the selection of broadcast receivers and phonographs for classroom use. The Committee is acting to enlist the cooperation of educational groups, of equipment manufacturers, and of broadcasters in a plan to obtain broadcast receivers designed with school use in mind.

You'll Like to Write Letters

By Virginia Young. Paper, 76 pages. Price, 60 cents. The Gregg Publishing Company, New York, N. Y.

A supplementary text in business-letter writing, covering all of the principal topics of the regular long course. Through unique illustrations and an informal discussion of the various factors of business-letter writing, the subject has been made distinctly interesting and practical.

The material takes up stilted wording, building good will, courtesy, planning of the letter, making the letter complete, and enthusiasm.

Spanish Basic Reading Grammar

By Cora Carroll Scanlon and George E. Vander Beke. Cloth, 206 pages. Price, $1.32. The Bruce Publishing Company, Milwaukee, Wis.

This *Spanish Basic Reading Grammar* seeks to develop reading, vocabulary, and grammar skill within the briefest possible time. It is based on and follows the recommendations of the Committees on Modern Languages, and provides extensive drill on vocabulary and grammar, offers connected readings at advantageous points, and includes provisions for individual differences. The content of twenty inclusive lessons is arranged logically and psychologically for most efficient teaching purposes.

The School Janitor

By N. E. Viles. Paper, 19 pages. Issued by the Interstate School Building Service, Peabody College for Teachers, Nashville, Tenn.

For many years the school janitor had been thought of as a person who fired the furnace, swept the floors, and did odd jobs around the building. Today, in modernizing the school buildings we have created for the janitor many specialized tasks. It takes a man who is well trained and who is willing to put forth an effort to do a satisfactory job in an economical manner.

The present pamphlet lays down the fundamentals of education, personal qualities, training, and selection of janitors. It outlines their responsibilities; relations to the teachers, pupils, and the public; functions and duties; the preparation of a work schedule; and the keeping of records and making of reports.

The Mechanical Accounting of the Cleveland Board of Education

Paper, 40 pages. Published by the Burroughs Adding Machine Company, Detroit, Mich.

The administering of the financial affairs of a large school system is a tremendous task. Of primary importance in the successful operation of a financial structure is the accounting system or tool with which employees at headquarters keep the records and transact the business of the school board.

The present direct method of machine accounting is the outgrowth of a combination of pen-and-ink and indirect mechanical methods. The system which was designed by the clerk-treasurer and chief accountant, has been approved by the board of education. Resources, liabilities, revenues, and expenditures are controlled by general ledger accounts, posted once a month from transaction summary journal vouchers. Irregular opening and closing entries are also posted from journal vouchers.

Budget estimates, based upon expenditures made during past years and expenditures anticipated for the ensuing year, are prepared in detail for each object of expenditure.

Revenue anticipated is appropriated for the benefit of the general, lunchroom, permanent improvement, building construction, and debt service funds.

Current operating expenditures for administrative and educational purposes are made from the general fund. Operating costs are kept for each business administrative department and for each division. Educational costs are kept for each school — elementary, junior high, senior high, special schools, etc.

Children's Voices

By Bertha E. Roberts and Aneta T. Beckman. Cloth, 184 pages. Silver, Burdett & Company, New York, N. Y.

Creative writings — verse and prose — of children in the elementary grades.

Table Games

By R. J. Marran. Cloth, 122 pages. Price, $1.50. A. S. Barnes & Company, New York, N. Y.

Sixty games, old and new, but all popular, are here outlined. Directions for making are complete. Valuable for teachers who are looking for new projects to be made in the school-shop and playground center; fine for parents who have a constructional turn; ideal for boys and girls to make and to play.

Washington and the Lafayettes

By Frank and Cortelle Hutchins. Cloth, 202 pages. Price, $2.50. Longmans, Green & Company, New York, N. Y.

The story of the personal friendship of Washington and the Marquis de Lafayette, and later of the first President's interest in and help to young George Lafayette who came as a refugee to America.

Algebra: Second Course

Purposeful mathematics. By Ernst R. Breslich. Cloth, 20 pages. Laidlaw Brothers, Chicago, Ill.

This book, like the First Course, is arranged in pedagogical units and contains numerous teaching tests and reviews and practical applications to industrial and business situations.

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Good news is on the way. Since 1901, we have been making laboratory and vocational furniture for schools. Yet the success of the Walrus line has been built — not only on experience — but on finding the answers to this question :"What *troubles* do schools have with laboratory and vocational furniture?"

We know your troubles. And recently we've found some new answers to old questions. Watch our advertising. Soon we shall be able to tell you about our discoveries.

Walrus is going ahead. You will want to know all about Walrus before buying new equipment.

No school is too small or too large to solicit our keen interest. The picture above shows a Walrus installation in the domestic science department of a small town high school. Sometimes such schools must make certain rooms do double duty. Walrus is glad to help plan when that is the case. Why not write us about *your* problem — or *your* troubles?

WALRUS MANUFACTURING CO., DECATUR, ILLINOIS

WAUPACA BUILDS FOR MODERN PRACTICAL PROGRAM

(Concluded from page 52)

ciding, selecting, eliminating, organizing, constructing, and creating," without too much disturbance to groups doing the more conventional work.

The detail of a typical alcove brings out the fact that, in addition to the work-table which accommodates six pupils, there is a vise-equipped workbench across the end of the recess by the window. Below the library shelves and textbook cases is another working ledge suitable for pasting, cutting, or displays. On the side opposite the workbench and window is an area into which are fitted the teacher's cloak closet, a three-drawer legal file, shelves, and drawers for storage. In planning this area great pains were taken to provide storage space suitable for modern educational equipment. How many teachers cannot find the right material at the right time in the old-type teacher's closet.

The cloakroom for each classroom is located "within the room" and thus under the observation and control of these teachers of small children.

Every classroom has several electrical outlets so located as to be usable for the teacher's desk lamp, for visual-education activities, or Christmas-tree lights. Since the use of duplicators has eliminated much of the need for large blackboard areas, corkboard, 54 inches high, has supplanted the typical blackboard along the side of the room opposite the windows. Above the blackboard, across the front or teacher's end, is a cork pinning strip, 16 to 18 inches in width. Asphalt-tile floors and wood-fiber paneled ceilings in each room and in the corridors assist in reducing the pupil-teacher vibrations.

Above the kindergarten and its auxiliary rooms has been created an oversize classroom. The activity alcove in this room has been developed in the form of a stage, elevated 15 inches above the classroom floor. The cloakrooms have been provided at either side so as to be usable for small dressing rooms. At the front of the small stage is a flexible wooden roller curtain, which may be lowered when desired. Although this oversized room is used for elementary-school programs when two or more rooms combine for special assemblies, the roller curtain enables the stage alcove to be shut off and used for an activity room in conjunction with the adjoining office. In order to be more readily available at all times, the library shelves for this room are placed at either side of the stage on the floor level.

Throughout the building an attempt has been made to provide facilities that will, with a minimum of space, assist in a functioning educational program. Across the end of the janitor's room, and opening out into the main corridor on each floor, is a large display case. It is not used like the typical trophy case so often seen in modern schools, unless examples of good schoolwork in art, penmanship, language or whatnot, are to be considered "the most worth-while trophies available." Instead of the customary dead-end corridor usually met in first unit buildings a small conference room has been created on each floor. This will of necessity be eliminated by the removal of a glass partition when the next unit is added. Slip joints in the exterior brick wall will facilitate the continuance of the corridors when the larger building is completed.

As will be noted from the pictures, the individual desk and chair units have been provided to encourage more flexibility of grouping within the classrooms. During a year's use, it has been noted that the arrangements of the seating are as varied as the teachers; and changes are made from day to day as the work of the moment demands. An acid-gray finish on the selected birchwood has been applied to all the equipment. This pleasing color harmonizes with the woodwork and gives a pleasing relief from the standard school brown color so prevalent in the average schoolroom.

Throughout the planning, constructing, and equipping of the building the following principles have been kept in the foreground: (1) functional use for all constructional details; (2) flexibility of arrangement; (3) durability of materials coupled with minimum of maintenance cost.

COMING CONVENTIONS

January 9–10. Nebraska State School-Board Association, at Grand Island. E. J. Overing, Red Cloud, secretary.

January 13. Massachusetts High School Principals' Association, at Boston. W. D. Sprague, Melrose, secretary.

February 1. Connecticut Association of Public-School Superintendents, at Hartford. L. R. McKusick, Winsted, secretary.

February 1. Pennsylvania State School Directors' Association, at Harrisburg. Mary E. Robbins, Sunbury, secretary.

February 7–9. Minnesota State School Board Association, at Minneapolis. John E. Palmer, Fergus Falls, secretary.

February 9–10. Southern Wisconsin Teachers' Association, at Madison. R. L. Liefenberg, Madison, secretary.

February 15–17. Oklahoma Teachers' Association, at Oklahoma City. C. M. Howell, Oklahoma City, secretary.

February 20–24. American Council of Guidance and Personnel Association, at St. Louis, Mo. W. C. Smyser, Oxford, secretary.

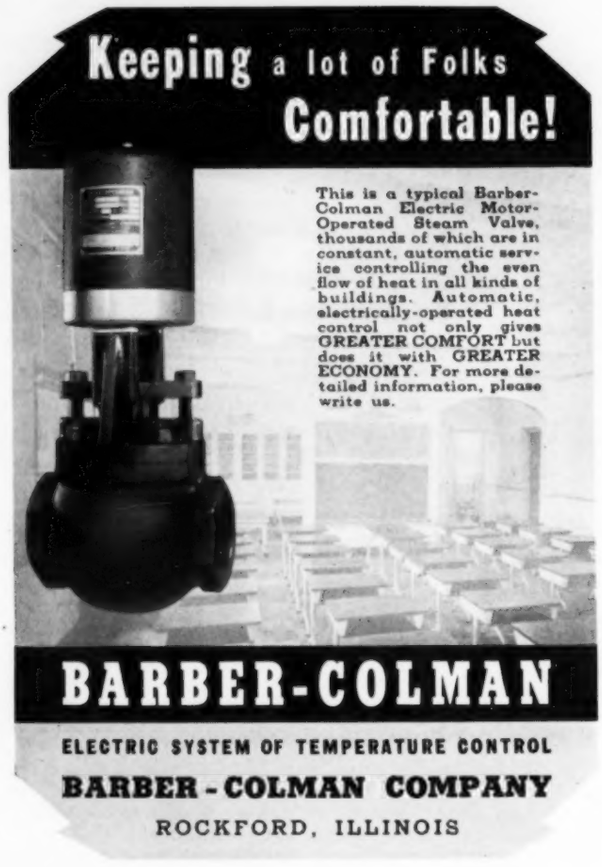
February 21–24. National Vocational Guidance Association, at St. Louis, Mo. Dr. R. B. Kenney, New York City, secretary.

February 23–24. Washington State School Directors' Association, at Walla Walla. Mrs. W. J. Rue, Manette, secretary.

February 24. National Advisory Council on School-Building Problems, at St. Louis, Mo. Miss Alice Barrows, Washington, D. C., secretary.

February 24–29. American Association of School Administrators, at St. Louis, Mo. Ben Graham, Pittsburgh, secretary.

February 24–29. National Association of Secondary-School Principals, at St. Louis, Mo. H. V. Church, Chicago, Ill., secretary.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This is a typical Barber-Colman Electric Motor-Operated Steam Valve, thousands of which are in constant, automatic service controlling the even flow of heat in all kinds of buildings. Automatic, electrically-operated heat control not only gives GREATER COMFORT but does it with GREATER ECONOMY. For more detailed information, please write us.
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BELLEVILLE ILLINOIS

APPLETON, WISCONSIN, BUILDS FOR BEAUTY AND UTILITY

(Concluded from page 47)

of the light going through the fixtures and the remainder being reflected from the ceilings. Circuits in classrooms are so arranged that on a dark day one side of the room may be lighted artificially to blend with the natural light coming in through windows.

A four-wire light circuit to balance the electrical load feeds current to the building and a three-wire circuit feeds the current for power. In addition, a third independent circuit, may be used to light corridors and exits in the event of emergencies.

General Features

Classroom and corridor floors are concrete covered with marbleized asphalt-tile blocks in two-tone colors. Color varies depending on where used. Ceilings are acoustically treated in all corridors and special rooms. Maple flooring is used only in the two gyms, the stage in the little theater, and part of the auditorium stage. The auditorium is laid with natural color concrete with cherry-colored aisles of concrete. Stairways and entrance lobbies are of terrazzo. Lavatory floors are covered with ceramic tile. Walls on stairways and foyers of the auditorium and gymnasium are of gray, brown-trimmed marble.

Another feature is a radio and public-address system with loud-speakers in every classroom, office, auditorium, and gymnasium. The system is controlled from the principal's office. An intercommunicating telephone system is also installed in the building with a switchboard in the general office.

About a dozen small janitor supply rooms, well distributed over the building and adjacent to rest rooms, saves many steps for the custodians.

Vital Statistics

I.	*Site*	
	Extent	14.78 acres
	Cost	$ 23,348.60
II.	*Building*	
	Date of Beginning	March 11, 1937
	Acceptance	June 14, 1938
	Occupancy	September 6, 1938
III.	*Cost — Building*	
	General Contract	$622,025.24
	Heating and Ventilating	90,989.65
	Electrical	56,774.35
	Plumbing	42,616.82
	Architects and Supervisory Service	45,702.84
	Administration — Insurance, Telephone, etc.	6,933.19
	Miscellaneous	1,605.46
	Excavating	6,700.00
	Cost per cubic foot	24.72
IV.	*Cost — Equipment*	
	Value of old equipment renovated	$ 75,000.00
	New equipment	100,000.00
V.	*Source of Funds*	
	PWA grant	$393,750.00
	Sponsor's Bond Sale	481,371.00
	Sale of Property	1,500.00
	From School Funds	80,000.00
	High-School Activities Fund	18,000.00

THE DEVELOPMENT OF THE SCHOOL BUILDING PROGRAM

(Concluded from page 67)

on the basis of basic requirements as these apply to lower grade work. The quality of construction, choice of material, and equipment are on the same plane as used for high schools and uniform throughout the county. The new building planning and construction after all were relatively simple when compared with the problems of building additions and reorganizing and remodeling old buildings.

In every community there are old buildings, surrounded with a halo of tradition and history, dear to those who entered and left their portals. A strong wave of antagonism usually develops when a proposal to demolish one of these old structures is publicly presented, and sometimes even taking the form of a court injunction. Invariably these buildings are obsolete when judged by modern standards of evaluation structurally and educationally, yet on the other hand, these very buildings are frequently too sound structurally to be relegated to the scrap heap. Here an honest and diligent effort to modernize, reorganize, and rejuvenate will produce surprising results if one is interested in doing that sort of work.

At least a dozen buildings in Kanawha County fell into this category, particularly the old district senior and junior high schools. These buildings poorly planned were inadequate to meet the demands of present-day curriculums, and the space available was insufficient for rearrangement without expansion by building additions. The present old buildings could in almost every case be remodeled to care properly for the academic needs of the high-school organization, and the additions were planned to house the necessary special activity rooms. In this manner the desirable results were attained. We achieved the salvage of the intrinsic value of the existing structure, thereby reducing John Taxpayer's initial capital investment and producing rejuvenated plants which not only meet the demands of the curriculum but which incorporated the modern conveniences and improvements mandated by present-day living standards.

ANOTHER SCHOOL EQUIPPED BY BECKLEY-CARDY

DANIEL WEBSTER HIGH SCHOOL, TULSA

Beckley-Cardy Equipment and Furnishings were chosen for the Daniel Webster High School, Tulsa, Oklahoma. Architects and Board agreed that Beckley-Cardy designs, material quality, workmanship, and economy were in keeping with the equipment demands of their million dollar school plant.

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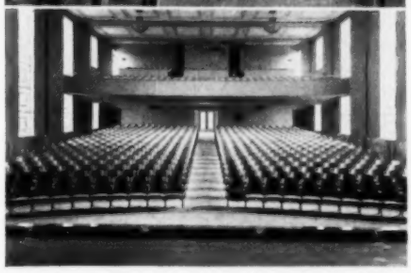
As one of the country's leading suppliers of equipment Beckley-Cardy furnishes schools in every state.

Write for illustrated catalogs stating specific needs. Our engineers will help solve your equipment problems.

CLASSROOM
Classroom equipped with Challenger Movable Chair Desks.

SCIENCE ROOM
Illustrating installation of Laboratory Desks and Tables.



AUDITORIUM
School auditorium equipped with Beckley-Cardy Auditorium Chairs.

BECKLEY-CARDY *1638 INDIANA AVENUE CHICAGO*

A MODERNISTIC BUILDING FOR A MODERN JUNIOR HIGH SCHOOL

(Concluded from page 37)

suspended on tracks for darkening the room when projection apparatus is used. The stage is equipped with the usual cyclorama and hangings in velour and contains the most modern lighting controls. Underneath the auditorium on the first-floor level are located the music and band rooms, costume rooms, toilets for boys and girls, and separate stage entrance. Here is found the cafeteria with complete kitchen and pantry facilities.

Administrative Offices

The administrative suite, on the second floor, includes a general office with vault, private office for the principal, and a conference room. The office of the adviser of girls has an outer waiting room, an inner service hall, and toilet. The nurse's room, located on the third floor, is complete with toilet and washroom and waiting room. The two-channel public-address system is centralized in the principal's office.

The Boiler Room

The building is heated by means of a two-pipe vacuum-steam system. Heat is furnished by two stoker-fired steel boilers, with automatic night and day dual control. Unit ventilators, governed by thermostatic control, are placed in all classrooms. The gymnasium and auditorium are heated with forced air from above. Constant hot-water service in all water consuming departments is provided by an automatic electric impelling device. The custodians' room is near the boiler room and is equipped with separate shower and toilet facilities. Wastepaper chutes, with openings on each floor, in corridors of classroom section, terminate in the basement. A freight unloading and storage room, coal bunkers, and a separate ash room, with manually operated hoist, complete this section of the building.

All built-in furniture was especially designed by the architect. This special equipment included benches and tables in the industrial department, mechanical-drawing tables, wall cabinets, tables for metalwork, tables and panels for electrical work, science laboratories, art room, library, and home-training department. All furniture is equipped with rubber shoes, to eliminate denting or marking the mastic floors. A complete radio and public-address system makes it possible to deliver two programs simultaneously in different parts of the building. A portable microphone makes it possible to broadcast from any part of the building. The principal may speak to any single room or combination of rooms. The public-address system contains the talk-back feature.

Cost and Cubage

The building was constructed at a total cost of $388,000, of which $22,000 was provided by a PWA grant. Two bond issues totaled $210,000, and the remaining cost of equipment, furnishings, and improvement of site amounting to $56,000, was derived from sinking fund and working balances on hand. The total cubage of 1,027,000 was divided as follows: auditorium section 146,000 cubic feet at 28.1 cents per cubic foot; gymnasium section 248,000 cubic feet at 24 cents per cubic foot; classroom section 633,000 cubic feet at 36.6 cents per cubic foot, including architectural cost and equipment.

The building was designed to meet the student and class needs for the junior high school of the community. Teachers were permitted to express their wishes for efficient instructional areas. Mr. R. C. Reinecke, of the Ellerbe Company, developed the suggestions of the superintendent and teachers, insisting upon provision for correct handling and circulation of pupils, economy and uniformity of plan and design, and proper construction of all sections. A conscientious board of education offered judicious criticism. The fine business acumen of the members of the board gave the right direction and sanction to the entire program. The community indicated its spirit of enterprise by comfortable majority votes on the two bond issues. There is unanimous approval of this fine plant which has attracted visitors from the Northwest and as far as Chicago.

PERSONAL NEWS

● Mr. S. T. Gobbey has assumed his duties as superintendent of schools at Suffolk, Va. He succeeds the late John E. Martin.

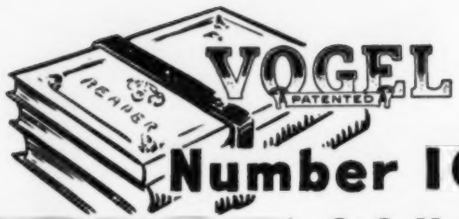
● Mr. A. D. Thomas, superintendent of schools at Hazleton, Pa., died at his home on November 7.

● Supt. William C. Greenwalt, of Olean, N. Y., has announced his retirement, to take effect on August 1, 1940.

● Mr. John E. Wade, Deputy Superintendent of Schools of New York City, has been re-elected for his third six-year term. Dr. Wade has been a member of the board of superintendents since 1927.

● Mr. Homer B. Ashland, of the Washington Northeast District of Vermont, has become superintendent of the Newport-Derby, Vt., schools.

● Mr. John Maher, of Watersmeet, Mich., has been elected president of the Gogebic County School Board Association. Supt. E. J. Oas has been named secretary-treasurer.



SCHOOL CLOSET

Installations, both new and replacement, in all parts of the country, attest to the fact that the VOGEL No. 10 continues to be the right closet for school use. VOGEL Closets always return the utmost in economy—both in water consumption and upkeep. *No working parts in tank to get out of order.*

Furnished in two types: VOGEL No. 10 (illustrated) Syphon action, vitreous china bowl, heavy nickeled brass flush valve, enameled drum-shaped pressure tank. VOGEL No. 10-A. Same specifications as No. 10 except has concealed pressure tank.

Sold only through wholesalers of plumbing supplies.

JOSEPH A. VOGEL COMPANY
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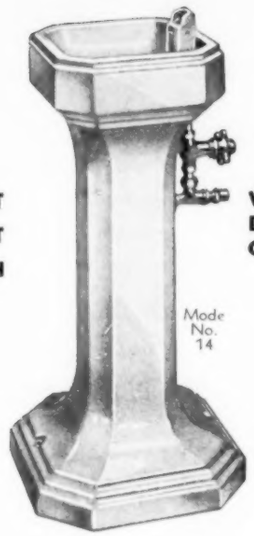
"Lips can't touch the R-S nozzle"

PROTECT STUDENT HEALTH



Write for Descriptive Catalog

RUNDLE-SPENCE MFG. CO.
445 No. Fourth St. Milwaukee, Wis.

LOCKER AND SHOWER FACILITIES FOR PHYSICAL EDUCATION

(Concluded from page 56)

on ceiling radiators, but such an installation must be planned and operated with care to secure positive and effective venting of air at all times without reducing room temperature or causing appreciable drafts. Where vent ducts serving basket locker or equipment drying rooms, are equipped with exhaust fans, the supply of air to such rooms should be planned so as to permit building up desirable pressure in the general locker or dressing space.

8. Materials and Construction

It is not possible here to discuss this topic adequately. Numerous questions, however, arise in connection with design and the materials, equipment, and methods of construction. The following brief suggestions are offered to supplement those that have been presented previously in this discussion.

a) Windows. Place window sills 5 or 6 ft. above the floor level; use glass brick or obscure glass for basement, ground-floor, or other exposed locations; frames and sash should be of moisture-resistive material.

b) Floors. Use tile, terrazzo, or cement. Floors of showers and drying room for bathers should be of nonslip material, preferably tile. Adequate drains should be provided for drying and dressing areas as well as showers, such drainage to be away from line of travel or occupancy of pupils.

c) Walls. Glazed-brick tile or smooth face brick are ideal, but concrete is satisfactory. Plaster applied directly to concrete or tile will prove satisfactory for locker rooms; in cold climates, exposed walls should be adequately insulated.

d) Ceilings. Use plaster ceilings, smooth finish for painting and cleaning. Rough plaster finish is not recommended. This applies to plaster walls, also.

These and similar suggestions will do little more than raise questions that should be considered in planning locker and shower facilities. Materials, equipment, and details of construction should be chosen to give the best possible results within the financial and space limitations encountered in providing such facilities in a given school building. The nature of the occupancy and the conditions sought are well understood or should be, and the design, choice of materials, and types of construction should be determined in the light of existing needs.

In conclusion, I wish to express the hope that architects and public school officials will study the housing needs of physical education more intensively than has been generally true, and that they will use every means at their disposal to assure that bathing and dressing facilities for physical education will be planned as carefully and effectively as shops, laboratories, and classrooms in public school buildings.

REPORTING THE EDUCATIONAL SERVICES OF PWA AND WPA

(Concluded from page 62)

and nursery-school programs, library services, research and survey projects, health services to lower-income families, and other projects have been welcomed by the communities and the schools where they have operated. The education program of WPA has covered the wide range of vocational training, literacy and citizenship education, parent education and nursery schools, and general adult education.

But much as PWA and WPA have done to raise the standards of educational facilities in the country, school-building construction has been nowhere near restored to predepression levels, which in turn fell far short of making up for the lag in school construction during the war.

John M. Carmody, Administrator of the Federal Works Agency, under which are both the Work Projects Administration and the Public Works Administration, recently summed up the program under which some 40,000 educational buildings have been built or improved within five years.

"Have we done enough?" he asked, then continued:

"Let's see, first, what the country's average annual outlay on school construction has been during the past five years. The figures aren't all in, but we can make an estimate. And the estimate is that we have been spending somewhere between 250 and 300 million dollars a year on school construction. We spent nearly 400 million dollars a year on school construction during the boom era, and even so we weren't spending enough to make up for war-time deficiencies.

"Our school buildings are getting older every year; and our school population is increasing; there are still 124,000 one-room schools in the country—in other words more than half our schools are as out of date as McGuffey's Reader; at least 75,000 of our schools are still firetraps; many of our high schools still are not equipped to provide the rich and varied educational program that our children need in order to deal intelligently with the complexities of modern life; and comparatively few of our schools are modern enough to provide education and recreational opportunities after school hours to school youths and adults, or to serve as adequate centers for civic and community activities.

Directory of Manufacturers' Products

and

PRODUCTS CHECKING LIST FOR SOURCES OF SUPPLY

A classified listing of products regularly used in school construction, maintenance, and operation, is published below, as a convenient guide to sources of supply. Manufacturers of products advertised in the AMERICAN SCHOOL BOARD JOURNAL are listed under their product headings. For the page number, on which their advertising appears in this issue, refer to the index to advertisements, page 121. On products not now advertised in the AMERICAN SCHOOL BOARD JOURNAL, use our Subscriber's Service Bureau, for reliable sources of supply. Complete details on page 117.

1 ACCOUNTING MACHINES
Burroughs Adding Machine Co.
International Business Machine Corp.

2 ACOUSTICAL TREATMENT
Armstrong Cork Co.
Celotex Corp.
The Congoleum Nairn, Inc.
Johns-Manville Corp.
U. S. Gypsum Co.
Wood Conversion Co.

3 ADJUSTABLE CHAIRS
Royal Metal Mfg. Co.
Kewaunee Mfg. Co.

4 ADJUSTBLE WINDOW SHADES
Beckley-Cardy Co.
Draper Shade Co., Luther O.

5 AIR CONDITIONING
Nelson Corp., Herman
Nesbitt, Inc., John J.
New York Blower Co.
Sturtevant Co., B. F.

6 ALARMS (Fire)
Holtzer Cabot Electric Co.
International Business Machine Corp.
Standard Electric Time Co.

7 ARCHITECTURAL SERVICE
(Directory Page No. 14)

8 ART MATERIALS
American Crayon Co.,
Binney & Smith Co.

9 ASBESTOS FIRE PROOFING
Johns-Manville Co.

10 ASBESTOS TILE
Johns-Manville Co.

11 ASH HANDLING APPARATUS

12 ATHLETIC FIELD EQUIPMENT

13 ATHLETIC SUPPLIES

14 ATLASES
Nystrom & Co., A. J.
Weber Costello Co.

15 AUDITORIUM SEATING
American Seating Co.
Arlington Seating Co.
Heywood-Wakefield Co.
Irwin Seating Co.
Peabody Seating Co.
Royal Metal Mfg. Co.

16 BINDERS BOARD
Binders Board Manufacturers Association

17 BLACKBOARD CLEANERS
Hillyard Chemical Co.
Huntington Laboratories
Vestal Chemical Co.
Weber Costello Co.

18 BLACKBOARDS, GLASS
Pittsburgh Plate Glass Co.
Libbey-Owens Ford Glass Co.

19 BLACKBOARD, MANUFACTURED
American Seating Co.
Beckley-Cardy Co.
Libbey-Owens Ford Glass Co.
Weber Costello Co.

20 BLACKBOARD RESURFACING

21 BLACKBOARD, SLATE
Beckley-Cardy Co.
Natural Slate Blackboard Co.

22 BLACKBOARDS, STEEL
American Seating Co.

23 BLEACHERS
Horn Folding Partition Co.
Pittsburgh- Des Moines Co.
Universal Bleacher Co.

24 BOILER COMPOUNDS
Hillyard Chemical Co.
Huntington Laboratories
Vestal Chemical Company

25 BOILERS (Heating)

26 BOOK CASES
Kewaunee Mfg. Co.
Kimball Co., W. W.
Peterson & Co., Leonard
Remington Rand Inc.

27 BOOK COVERS
Holden Patent Book Cover Co.

28 BOOK COVERING MATERIALS
E. I. Du Pont de Nemours & Co., Inc.

29 BOOKKEEPING MACHINES
Burroughs Adding Machine Co.
International Business Machines Corp.

30 BOOKKEEPING RECORDS
Acme Visible Records, Inc.

31 BRICK, FACE

32 BRONZE TABLETS

33 BRUSHES, FLOOR
Continental Car-Na-Var Corp.
Hillyard Chemical Co.
Huntington Laboratories
Vestal Chemical Co.

34 BULLETIN BOARDS
Armstrong Cork Co.
Beckley-Cardy Co.
Kewaunee Mfg. Co.
Sheldon & Co., E. H.
Weber Costello Co.

35 BUSES
International Harvester Co.

36 CAFETERIA EQUIPMENT
Hamilton Mfg. Co.
Kewaunee Mfg. Co.
Pick Co., Albert
Sheldon & Co., E. H.
Walrus Mfg. Co.

37 CAPS AND GOWNS

38 CASTERS
Bassick Co., The

39 CAULKING COMPOUNDS
Sonneborn Sons, Inc., L.

40 CEMENT WATERPROOF

41 CHAIRS
Acme Chair Co.
American Seating Co.
Arlington Seating Co.
Clarin Mfg. Co.
Columbia School Furniture Corp.
Durham Mfg. Co.
Heywood-Wakefield Co.
Irwin Seating Co.
Lyon Metal Products, Inc.
Norcor Mfg. Co.
Peabody Seating Co.
Leonard Peterson & Co.
Royal Metal Mfg. Co.

42 CHALK
American Crayon Co., The
Binney & Smith Co.
Weber Costello Co.

43 CHALK TROUGHS
Dudfield Mfg. Co.
Weber Costello Co.

44 CHARTS
Nystrom & Co., A. J.
Weber Costello Co.

45 CLASSROOM RECORDINGS
Intercontinental Audio-Video Co.

46 CLEANING SYSTEMS AND SUPPLIES
Colgate-Palmolive-Peet Co.
Continental Car-Na-Var Corp.
Finnell System, Inc.
Ford Co., The J. B.
Hillyard Chemical Co.
Huntington Laboratories
Vestal Chemical Co.

47 CLOCKS, PROGRAM
Holtzer-Cabot Electric Co.
International Business Machines Corp.
Standard Electric Time Co.

48 COAL

49 CORK, COMPOSITION
Armstrong Cork Co.

50 CORK TILE AND CARPET
Armstrong Cork Co.
Congoleum Nairn, Inc.

51 CRAYONS
American Crayon Co., The
Binney & Smith Co.
Weber Costello Co.

52 CRAYON COMPASSES
Weber Costello Co.

53 DAMPPROOFING COMPOUNDS
L. Sonneborn Sons Co., Inc.

54 DESKS, SCHOOL
American Seating Co.
Arlington Seating Co.
Columbia School Furniture Corp.
Heywood-Wakefield Co.
Irwin Seating Co.
Peabody Seating Co.
Royal Metal Mfg. Co.

55 DETERGENTS
Ford Company, The J. B.

56 DIPLOMAS

57 DISHWASHING COMPOUNDS
Ford Company, The J. B.
Hillyard Chemical Co.
Huntington Laboratories
Vestal Chemical Co.

58 DISINFECTANTS
Continental Car-Na-Var Corp.
Hillyard Chemical Co.
Huntington Laboratories
Vestal Chemical Co.

59 DISPENSERS, SOAP
Colgate-Polmolive-Peet Co.
J. B. Ford Sales Company
Hillyard Chemical Co.
Huntington Laboratories
Vestal Chemical Co.

60 DOMESTIC SCIENCE FURNITURE
Hamilton Mfg. Co.
Kewaunee Mfg. Co.
Kimball Co., W. W.
Peterson & Co., Leonard
Sheldon & Co., E. H.

61 DOOR CHECKS
Norton Door Closer Co.

62 DOOR CLOSERS
Norton Door Closer Co.

63 DOOR MATS

64 DRAFTING ROOM FURNITURE
Kewaunee Mfg.
Kimball Co., W. W.
Peterson & Co., Leonard
Sheldon & Co., E. H.

65 DRIERS, FACE, HAND, HAIR
Chicago Hardware Foundry Co.

66 DRINKING FOUNTAINS
Century Brass Works
Crane Company
Rundle-Spence Mfg. Co.
Taylor Co., Halsey W.

67 DUPLICATORS
Beckley-Cardy Co.
Columbia Ribbon & Carbon Mfg. Co., Inc.
Dick Co., A. B.
Ditto, Inc.

68 ENGRAVERS
Premier Engraving Co.

69 ENAMELS
Pittsburgh Plate Glass Co.
L. Sonneborn Sons Co., Inc.

70 ERASERS, BLACKBOARD
Beckley-Cardy Co.
Weber Costello Co.

71 ERASER CLEANERS
Beckley-Cardy Co.
Weber Costello Co.

72 FENCES
Continental Steel Corp.
Page Fence Association

73 FILING EQUIPMENT
All-Steel-Equip Co., Inc.
Remington Rand Inc.

(Continued on page 116)

OUTWEARS ORDINARY WAX!

CAR-NA-VAR
THE PERFECT FLOOR TREATMENT

NON-SLIPPERY — CUTS LABOR COSTS

Reports Minoa, New York School After Using for Three Years

CAR-NA-VAR is the original heavy duty varnish-gum and wax floor treatment that combines the durability of varnish and scratch-resisting qualities of wax. WILL OUTWEAR ANY WAX ON THE MARKET! Car-Na-Var requires fewer applications . . . saves material and labor. Applied with mop . . . dries in 30 minutes. Non slippery! WATERPROOF! Supplied in "natural" and popular colors. Acts as own sealer.

The SILENT CHIEF

Super-Powered, Balanced FLOOR MACHINE

Swift and silent! Amply powered by special geared head ball-bearing motor to give maximum efficiency. Yet so perfectly balanced a woman could run one all day without tiring. So Noiseless in operation, the Silent Chief has been adopted by countless schools, hospitals and public buildings all over the country. Supplied in 5 models and 4 sizes.

FREE BOOK!

Not mere sales propaganda . . . but a handy book of practical "do's" and "don'ts" written by floor maintenance experts. Write for copy today. No obligation.

Free Demonstration On Your Own Floors

CONTINENTAL CAR-NA-VAR CORP.
1560 E. National Ave., Brazil, Ind.

SCHOOL CONSTRUCTION

(Concluded from page 25)

protected that smoke and gas hazards will not add to the possibility of pupil panic.

Realizing that a majority of the hazards in school buildings arise from the possibility of fires and that these fires generally originate in certain hot spots[4] in the building, it seems desirable to place some added protection around the places where fires seem most likely to start. Furnace and boiler rooms should be segregated from the areas used by pupils, either by being placed outside the main walls of the building or by being totally enclosed by fire-resistive walls and ceiling with openings properly shielded by fire doors. The provision suggested here for furnace rooms is feasible even in one-story buildings with walls of combustible construction. Likewise, other known hot spots such as certain laboratories, shop units, or rooms used for cooking should be sufficiently enclosed to prevent a too rapid spread of fire from these areas to other parts of the building. In one-story buildings of combustible construction these units may be separated or may be placed in such a location that they cause little hazard to pupils in other parts of the building. Special rooms where large numbers of pupils may come together, such as auditorium and gymnasium units, should be located near or at ground level, with ample regular exits opening into the building and, if possible, emergency exits opening directly to the outside.

As school-building construction standards are developed, attention should be given to safety from electrical hazards such as overloaded and unprotected wires. It will also be desirable to eliminate corridor wall projections and open wells not protected by suitable banisters. Other hazards such as ventilating and heating ducts in combustible partitions and floors should be eliminated from consideration. Likewise, attention should be given to the protection of the health of the pupils through the construction of proper floor and wall surfaces.

It will be noted that throughout this discussion much attention has been given to adequacy, cost, and pupil safety. It is realized that with the large investment in school plants property protection should also be considered. However, property protection may, of necessity, be of secondary importance to pupil safety when funds are limited and the demand for adequacy of space becomes imperative.

TOLEDO BUILDS VOCATIONAL SCHOOL FOR BOYS

(Concluded from page 43)

subdivided into tool, locker, and conference areas. In such a typical shop these areas divide approximately 71 per cent work space, 7 per cent tool crib, 12 per cent conference room, 7 per cent locker and washroom, 3 per cent entrance corridor.

Natural daylight was not considered a dominant factor in the building arrangement. Realizing the fact that the facilities were to be used in an extensive night program, ample electric light was provided.

The electric power lines are run in the open in the latest factory-type conduits and raceways which permits a maximum flexibility in the location of machinery and future equipment changes. DC current is available from a central converter for use in electrical laboratories and elsewhere for experimental purposes. Compressed air for shop and laboratory use is also supplied from a central compressor plant. Automatic intercommunicating-telephone system connects all shops and rooms. Provision has been made for the future installation of radio and a group plan of automatic electric-light control operated with electric eyes.

Floors in the shops vary according to the shop requirements and are either Gibraltar cement finish or storm-type maple, mastic set. Shop-corridor floors are Gibraltar cement finish. To avoid the use of plaster, cinder cement blocks have been extensively used as a wall facing.

Steel furniture, cabinets, lockers, etc., were used wherever practical. All machinery involved in the educational equipment is individual motor driven and all motors of ½ h.p. or larger used in fixed machines are pushbutton controlled with indicating lamp.

Only items eligible for PWA grant were purchased. Expenditures for general building equipment amounted to $102,000, and $195,000 was spent for educational equipment.

The total cost of the completed project was $1,768,391, which included land, engineering, interest, building, and equipment. The building contract amounted to $1,300,867.

The building was opened with an initial enrollment of 900 day students, 750 evening-school students and apprentices. There were over 100,000 persons during the year who attended educational and civic activities conducted therein. There is ample evidence that this new building and equipment will do much to further the interests of vocational education in this community and the State of Ohio.

HOUSING THE MODERN ELEMENTARY SCHOOL

(Concluded from page 49)

rooms in their respective buildings. In 1932 the majority of the music rooms indicated on the plans of seven buildings were classrooms labeled music rooms.

The strides being made in advanced design of these spaces were exemplified by two music rooms, in particular. In each the sizes were about 40 ft. by 22 ft. 3 in. Stages, in one room 12 ft. 6 in. by 9 ft. in dimensions, were provided. Sound insulation of walls and ceiling served to better music work as well as lessen distraction in adjoining rooms.

Rooms for Atypical Children

Seven buildings of the 22 studied had rooms for atypical children. The wide variety of activities carried on in this field is apparent from the listing of the names of these spaces. These include: fresh air, speech correction, orthogenic, mental deviate, solarium, and adjustment rooms.

The open-air room in one elementary school, besides special orientation to secure maximum sunlight and fresh air, had an adjacent toilet, a kitchenette, 7 ft. 7 in. by 9 ft. 10 in. in size, a coatroom, and a terrace, 14 ft. 6 in. long by 22 ft. 3 in. wide.

[4] *Improving the Insurance Program in the Local School Districts*, N. E. Viles, 1934, p. 29.

RECENT BETTERMENT IN CALIFORNIA

(Concluded from page 24)

Artificial illumination is automatically controlled by a photoelectric cell to provide 24 foot-candles at the work level with evenly diffused light.

Although desks are shown on the plan to face the inner wall, the arrangement of day lighting will permit group table seating in any direction without sky glare. An attempt has been made through the use of low ceiling areas, low windows, and the relation of the scale of furniture to other room features to maintain an intimate relation to the child and create an atmosphere in which he or she may feel at ease, because of its similarity to home dimensions.

Doors from the practical workroom open out to the adjacent outdoor-classroom space which makes possible outdoor activities such as student gardening, practice for plays, or other appropriate outdoor activities aside from the recess play.

It should be noted that this classroom unit plan has been adapted to north lighting with the common corridor on the south running east and west and rooms on one side only. The shape of the classroom results in shorter corridors also.

The conventional activity type of classroom, corridor one side, 24 ft. wide by 40 ft. long, 10-ft. corridors and 12-ft. ceilings with slab floor on ground requires 1,458 sq. ft. of floor area, including walls. Cubed from the floor line to roof line it contains 21,870 cu. ft. The Avenal classroom requires 1,564 sq. ft. of floor area and 18,200 cu. ft.

The cost of the Avenal type classroom unit with slab floors, wood frame, and stucco construction is equivalent to the cost of the conventional type unit with slab floors and reinforced-concrete exterior walls, similarly equipped and finished.

Now under construction in a newly organized high-school district, the Carmel District, California, a combination junior and senior high school is unique in its type of construction, a contribution of Architects Chas. H. Franklin and Ernest J. Kump, Jr., to earthquake-resistant schoolhousing. Rigid steel-frame construction is designed to resist seismic disturbances. Unit planning reduces the cost of construction. The plans, in addition to being unique in structural design, represent a solution to a difficult site problem.

From the lowest to the highest point of the rolling hillside upon which the school is being placed, there is a difference in elevation of approximately one hundred feet. Each step in contour level in the photograph represents a rise of approximately five feet. Farsighted planning is making possible a unified and integrated plan in spite of this difficulty. The plan has other distinctive features also.

The architecture follows that usually employed by these architects to meet earthquake resistance, designed to use natural bilateral lighting. On one side of the classroom are the large windows with an unobstructed glass area, the lower portion of which is vented. The opposite side of the room is lighted by a continuous upper bank of windows protected on the exterior by a 2-ft. canopy. These windows are used only for lighting; the use of them for ventilation would upset the light balance. Over the sash on the interior are aluminum slat shades. The slats are secured in position to reflect direct light to the ceiling, giving indirect light to the room. These shades may be raised on sunless days. The natural light is evenly diffused by the sloping ceilings. Cross ventilation is provided by adjustable, lightproof wall ventilators (panelouvres) placed on the corridor side of the classroom.

A copper roof will reduce maintenance costs, and incidentally will react favorably with the sea air to form a protective coating of a beautiful green shade.

The plant is being erected upon a site of 22 acres costing $30,000. A total cost of construction of $300,000 is distributed:

Gymnasium, cafeteria, shops, swimming pool, classrooms and administration facilities	$193,000
Site development	22,800
Equipment	25,000
Engineers', architects', inspectors' fees and test reports	18,310
Preliminary cost, rights of way, site, etc.	40,890

The site development includes roads, surfacing, athletic fields, bleachers, tennis courts, service lines, etc. This is quite an expensive item, due to the uneven topography of the site, but not out of line with the remainder of the project.

These are some of the most outstanding improvements made in schoolhouse construction in California. Limited space prevents a discussion of other outstanding features of recent trends of improvement in California schoolhouse construction, such as have occurred elsewhere in the elementary-school field, in the unique development of combination gymnasium-auditorium facilities, and farsighted and distinctive planning for junior-college needs.

ECONOMICS DEPARTMENTS PLUMBING REQUIREMENTS

(Concluded from page 28)

work more effectively and efficiently, if the equipment is of reliable good quality. School administrators have found by experience that it pays to buy the very best and save on repairs and replacement of worn-out parts later on.

Experience has also shown that it is a wise and cautious administration that insists on the services of a master plumber for the supervision of the modernization or addition of new plumbing equipment in the school. The master plumber is required by law to have a knowledge of the proper design, location, and installation of supply and waste pipe. He is also required to have a knowledge of the flow of liquids, action of siphons, and an understanding of the dangers of bacterial infection.

Future homemakers will learn what they have lived. They should be given a chance to live with the best equipment, installed in the safest way.

"ACADEMY" Only $298

- Projects Sound Films
- Projects Silent Films
- Serves Classrooms
- Serves Small Auditoriums
- Permits Adding Public Address Microphone and Phonograph Turntable

WHEN your budget is small and your visual education needs are great . . . that's the time to get a versatile Filmosound Projector!

Consider Filmosound "Academy," above, for instance. It meets many school needs. And it is precision-built for lasting, dependable service by the makers, since 1907, of Hollywood's professional movie equipment. Before you buy *any* projector, investigate Filmosounds. First step: mail coupon for free catalog describing complete range of models. Mail it *today.*

OTHER FILMOSOUNDS FROM $276 to $1500

GET FREE FILM CATALOG—Lists and reviews over 1400 sound films for school use. Free to owners of 16 mm. sound projectors, 25c to others. Film *list* free to everyone. Use coupon.

FILM LOANED FREE

"How Motion Pictures Move and Talk" is a new educational film produced by Bell & Howell, available, 16 mm. sound or silent, for *free* school showings! It traces a Hollywood "talkie" from raw film to finished picture. Mail coupon. Bell & Howell Company, Chicago; New York; Hollywood; London. *Established 1907.*

Mail Coupon Today

BELL & HOWELL COMPANY
1814 Larchmont Avenue
Chicago, Illinois
( ) Please send free Filmosound Projector catalog.
ASBJ 1-40
We now have.....(number)
of .....(make) sound projectors. Include ( ) catalog, ( ) list of new school films.
Our school would like to show a
( ) sound
( ) silent 16 mm. print of "How Motion Pictures Move and Talk"
on ..... or .....
(date) (alternate date)
Name .....
Address .....
City ..... State .....

PRECISION-MADE BY
BELL & HOWELL

After The Meeting

Schoolboy Howlers

The following interesting answers to examination questions have been collected by a British teacher:

Iron is grown in large quantities for manufacturing purposes in South France.

Africa is a very dark place, nearly covered with trees and animals.

The people of India are divided into casts and outcasts.

The Australian natives soak the dew into sponges to drink when the water is dry.

The inhabitants of Paris are called Parisites.

The Arctic regions are neither hot nor cold.

They abound in birds of great and beautiful plumage, but no song, such as the elephant and the camel.

A circle is a line of no depth, running around a dot.

The line opposite the right angle in a right-angled triangle is called the hippopotamus.

A line in geometry is what you draw and do not use.

Air is made up of oxygen and sanotogen.

The wife of a Duke is a ducky. The masculine of Duchess is duck.

The leopard is covered with spots.

The Augustan era was a mistake of Augustus.

Shakespeare wrote tragedies, comedies, and errors.

After twice committing suicide, he lived to a great age, and died a natural death.

An epigram is a man who goes from one country to another.

What was Adam's punishment? He was to keep Eve.

The boy who looks at the future before it arrives can then look back at the past.

War Humor

"Min', noo, an' dinna loas yer gas masks, children," said a Scottish teacher. "Yer life may be dependin' on them. An' whit's muir im-pourt-ant, if ye loas them, yer faither 'll hae tae buy ye a new yin."—*Teachers' World, London.*

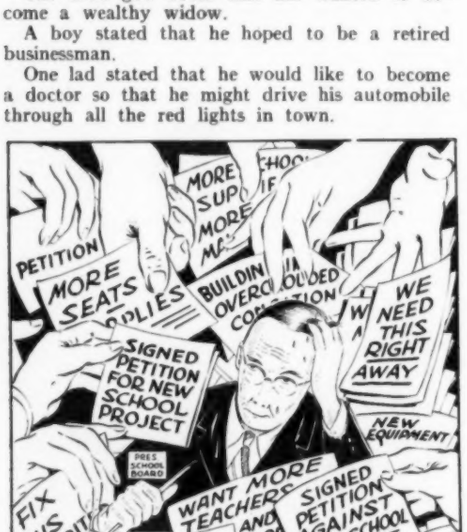
What They Wanted To Be

Dean Fred Smith, of the University of Tennessee, is authority for the statement that children sometimes have queer vocational expectations. In a New England town where he conducted a course in guidance these surprising answers were made by children:

One little girl wrote that she wanted to become a wealthy widow.

A boy stated that he hoped to be a retired businessman.

One lad stated that he would like to become a doctor so that he might drive his automobile through all the red lights in town.



The problem of the school board member as seen by the Miami, Florida, School Digest.

School Buyers' News

New Visual Educational Equipment

The Bausch & Lomb Optical Company, Rochester, N. Y., has issued an interesting four-page circular, describing its newest items of equipment for visual education. It describes the Balopticon BDT, which is most compact and efficient for projecting lantern slides in the classroom or auditorium; the overhead Balopticon BOH, which has several unusual advantages of value in visual education; namely, visible screen, easy change of slides, stressing of features on the slide, and operation of machine while talking; Balopticon ERM, which enables a teacher to project a vast amount of illustrative material, including photographs, post cards, pictures, maps, charts, and geological specimens; Balopticon LRM, which is a combined slide and opaque projector, having a projection distance of 18 to 20 feet; and Balopticon KOSB, which makes possible translucent screen projection. Other new equipment are the Model B Micro projector, which can be used with any standard microscope, the Model HH microscope, which is adapted for elementary botany, zoology, and biology classes in high school or college, and the Triple-Purpose Micro projector, which has been designed for high-school use, and can be used in three positions to accomplish three types of projection.

The firm has issued its latest Catalog E-11, listing its complete line of Balopticons and accessories for school use. A copy of the catalog will be sent to any school official upon request.

Mr. Robert D. Henderson Joins Gregg

Mr. Robert D. Henderson, of Austin, Tex., has accepted a position as a representative of the Gregg Publishing Company, with headquarters at Austin. Mr. Henderson is widely known in both educational and business circles. For thirteen years he was with the Texas State Department of Education, where he served as director of textbook administration.

Royal Metal Furniture

The Royal Metal Manufacturing Company, which has just moved into new and greatly enlarged quarters at 175 North Michigan Ave., Chicago, has issued its 1940 catalog of institutional furniture. Special attention is devoted in the large 84-page book to folding chairs, reception room and teachers' room furniture, arm and side chairs, office and library chairs, special tables, etc.

Readers of the JOURNAL may obtain copies by sending a postal request.

New "Oxford" China Lavatory

One reason for the popularity of vitreous china for lavatories is that the hard, glossy surface is impervious to the action of soaps and household acids. It is difficult to soil, and easy to keep spotless.

This quality makes the new Crane "Oxford" specially appropriate for school installations where use is frequent and space limited. It measures 19 by 17 inches, but has a basin area of 14 by 10½ inches. It has the typical Crane front-panel design, generous dry shelf space, and recessed supply and waste controls.

Data is available from the Crane Company, Chicago, Ill.

New Spencer MK Delineascopes

The Spencer Lens Company, Buffalo, N. Y., has announced additions to its line of projectors for use with 2 by 2-in. black-and-white and color films and slides.

The new Model MK delineascopes include a 100-watt, a 200-watt, and a 300-watt instrument. Constructed of the finest materials and sturdy in design, these MK instruments are built to give a lifetime of service. The lamp-house cover is hinged, permitting easy access to the bulb or condensing lenses, and the lenses are mounted in such a manner that they can be easily removed for cleaning. The 200-watt instrument, which is equipped with the same optical system as the 300-watt model, can be converted into a 300-watt model by mounting on the cooling unit and changing the bulb.

The 200-watt and 300-watt projectors are equipped with the Spencer vertical feeding unit which facilitates the changing of slides. Each slide may be snapped quickly into position; a film-viewing device is provided for viewing strips of films preparatory to making up individual slides; a fan cooling unit, operated by a universal motor, has direct control with a rheostat on the speed of the fan. The 100-watt delineascope insures brilliant projection for home use, while the 200-watt and 300-watt models serve all school purposes.

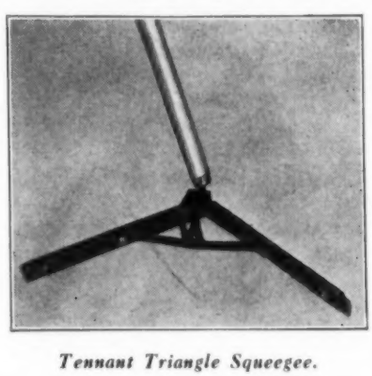
A Visibility Yardstick

The A. B. Dick Company is doing schools and education a very real service in making available for schoolmen "The Visibility Yardstick" for measuring the relative visibility and legibility of duplicated copy produced (*a*) by the mimeograph and (*b*) by various sizes of printed type. The yardstick affords a handy means for setting up and maintaining standards in the reproduction of duplicated teaching materials.

Copies of the yardstick may be obtained from A. B. Dick Company, Dept. B-129, 720 W. Jackson Blvd., Chicago, Ill.

New Tennant V-Type Squeegee

The G. H. Tennant Company, 1821 N. E. Marshall St., Minneapolis, Minn., has announced a new V-type, steering squeegee, which is constructed so that the user can steer it in any direction merely by twisting the handle.



Tennant Triangle Squeegee.

The squeegee rides close to the floor while the handle moves up or down, or sideways. This permits the efficient use under cars and trucks, worktables, and benches. It is capable of getting into low spots so that water, slush, and snow can easily be brought out from under obstacles, from corners, and other difficult-to-clean areas.

The tool is durably constructed, with a double-edged, tapered rubber blade. The blade is reversible, and the rubber is available for replacement when the edges are worn. The tool is made in three sizes: small, with a spread of 16 in.; medium, with a spread of 27 in.; and large, with a spread of 38 in. Complete information is available upon request.

DeVry Specifications for Sound Pictures

The DeVry Corporation, 1111 Armitage Ave., Chicago, Ill., has prepared a series of specifications for the use of school authorities in purchasing and installing sound motion-picture equipment.

The specifications comprise one for a 16-mm. classroom sound-on-film projector, one for a 16-mm. multiple shutter sound-on-film projector, one on a 16-mm. sprocket intermittent system sound-on-film projector, one on 35-mm. portable sound-on-film projector, one on 35-mm. semi-portable heavy-duty projector, and one on a 35-mm. theater projector.

Complete information will be furnished to any school official upon request.

BUYERS' NEWS

Announce New Linoleum Blocks

A new departure has been undertaken by The American Crayon Company in connection with the manufacture of linoleum blocks. In place of the usual brown linoleum, the firm is now using a jet black battleship linoleum for their fused-gray linoleum blocks.

In the use of the black linoleum an advantage is noted in the contrast that the black under-surface affords with their light fused gray top surface. This contrast makes the cutting easier and faster and saves the eyes. The black cutout areas stand out prominently against the light top coating. It also responds very well to cutting tools.

Complete information is available upon request.

P-DM New All-Steel Grandstand

The Pittsburgh-Des Moines Steel Company, 3429 Neville Island, Pittsburgh, Pa., has issued an eight-page descriptive booklet, handsomely illustrated and printed in three colors, which describes the construction features and application of the unit system employed in the firm's all-steel grandstands.

The booklet contains numerous reproductions of current installations in schools and colleges throughout the country, together with tables, and a convenient method of calculating seating capacities.

These grandstands have other advantages, including low first cost, strength, permanence, and economy of maintenance. A copy of the descriptive booklet may be obtained by writing to the firm at Pittsburgh.

New Super-Visible Record Equipment

The Acme Visible Records, Inc., 122 South Michigan Ave., Chicago, Ill., has announced the "Super-Visible," a new type of visible record equipment, setting a new standard for compactness and low cost. Through a combination of ingenious mechanical devices and adaptations, extremely high capacity has been achieved in this new vertical visible equipment for letter-file drawers.

The "Super-Visible" is ideal for records numbering in the hundreds of thousands and its smaller units make it ideal for records numbering only a few hundred. Its outstanding feature is the flexibility with which its several units can be tailored to fit special record-keeping conditions.

The Acme Company has issued a special 24-page catalog, which is available to any school official upon request.

Private Dressing Facilities in Girls' Locker Room

Provisions for private dressing facilities have been provided in the recently completed Niles Center, Ill., school in a new and unique manner. Following the architect's design, standard, double-tier, All-Steel-Equip lockers were arranged to form a three-sided cubicle. A canvas curtain hung from a chromium-plated tube, across the open side, converts the individual sections into private dressing rooms.

All-Steel Girls' Locker & Dressing Room Unit

Although there are sixteen lockers in each section the lockers are assigned in such a manner that not more than two girls, and in most cases only one, use the "dressing room" at a time. The lockers, tubing, and partitions were furnished by All-Steel-Equip Co., Inc., Aurora, Ill.

Kodachrome Arc Projection Improved

The Bell-Howell Company, 1801 Larchmont Ave., Chicago, Ill., have announced a new type of carbon, which it is claimed is of major importance in the projection of 16-mm. Kodachrome film. It produces illumination much higher in red-ray content than has been previously available in arc-lamp projection. Kodachrome film, when screened with arc-lamp illumination, has a tendency to become cold in color. With the new type of carbon, the deficiency is overcome, and the colors may be screened in their true warmth and tonal values.

Complete information is available upon request.

NEW FILM SERVICE

The United States Film Service, Washington, D. C., has announced a new film service, which provides information on all motion pictures distributed by the Federal Government. No rental fee is charged, but the exhibitor is expected to pay the transportation charges.

Requests for bookings may be directed to the government agency distributing the desired films. The Film Service will assist in obtaining films and in planning educational motion-picture programs. Current releases include films on housing, conservation, and internationalism.

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